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On the Occurrence of the Lead Ores in Missouri.*

BY JAMES R. GAGE M. E.

CONCLUDED FROM PAGE 194.

III. Vertical fissures.

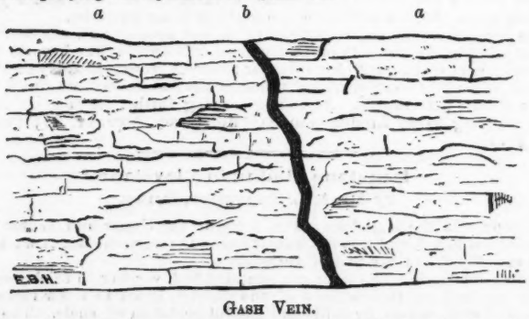
Vertical fissures may be farther divided into "true-veins," "gash-veins," and "stock-werk."

A "true-vein" is a vertical opening almost invariably filled with a gangue, and if a lead-ore vein, the gangue usually consists of galena, frequently in crystals, associated with quartz, calcspar, heavy spar, iron and copper pyrites, and not unfrequently fluor-spar, zinc-blende and other minerals.

There are several points in Missouri where vertical veins occur and are claimed to be "true-veins;" they have all the appearance of being such, but it is doubtful if they extend below the set of limestone beds in which they occur.

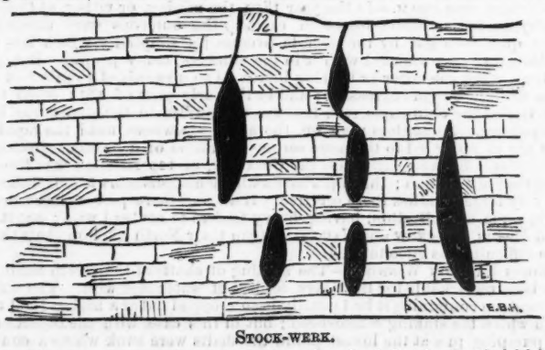
"Gash-veins" are of much less importance than the true vein formation just discussed, the principal distinction between the true and gash vein is the certainty of the former's yield and the great depth to which it can be worked, and the variety of its associate minerals, while the latter, though very rich for a short distance, is very uncertain in extent, and is almost certain to be cut off as soon as it reaches the limit of the set of beds in which it occurs, and this is natural, as "gash-veins" are fissures produced by shrinkage, and almost invariably confined to a certain set of beds near the surface; after the formation of the fissures the space is filled with mineral deposits from the side or above, and usually contains a single ore unaccompanied by any minerals, while the "true vein" is caused by great dynamical agencies originating within the earth, and through these movements fissures or faults have been formed in which the metalliferous ores have been subsequently deposited.

The accompanying cut represents a "gash-vein."



GASH VEIN.

This mode of occurrence is very frequent in this region. At the point where this was sketched, the bed of limestone *a* is about three hundred feet thick, and is traversed by numerous veins *b* of galena, usually parallel to each other. This vein of *b* is from two to three inches wide, and is firmly attached to both the hanging and foot wall of rock; no other mineral occurs associated with the galena. The vein has now been worked one hundred feet in depth without any indication of diminishing, the width remaining about the same; but I think it highly probable that the vein is confined to the limestone and does not extend into the underlying crystalline rocks.



STOCK-WERK.

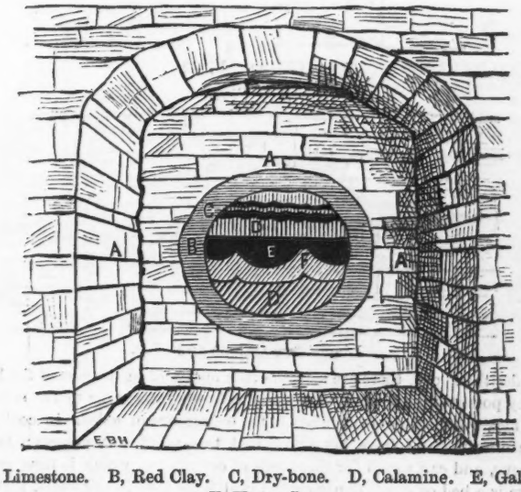
Besides "true veins" and "gash veins" there is another vertical formation which might be called "stock-werk." This is of but little importance, both on account of the rarity of its occurrence and the small yield. The "stock-werk" occurrence is more frequent in horizontal than in vertical positions; it is represented by the preceding cross section.

IV. Horizontal Fissures.

The lead-ores of Missouri when found in a horizontal position occur in caves, pipe-veins, and stock-werk.

Caves.—This mode of occurrence is one of the most interesting to the scientist, and on account of the quality and quantity of the ore thus found, one of the most important to the economist. The "caves" are horizontal fissures in the rock, which have neither been produced by internal agencies, as the "true-veins," nor by shrinkage, as the "gash veins," but have been produced by the dissolution and removal of the softer portions of the rock. The formation is composed of several series of limestone; that bed in which the lead ores occur is *softer* than either the overlying or underlying limestone, and consequently water or any solution percolating the rock would naturally seek the softer and more porous rock as a conductor. The solution acting as a solvent upon the rock would dissolve out portions, until a perfect net-work of horizontal fissures was formed, passing into each other at every angle, and varying in size from a few inches to many feet in width and height, according to the nature of the rock. After the formation of these caves, they were then refilled by water passing slowly through and depositing the various minerals held in solution. It is possible that the metalliferous deposits were formed synchronously with the formation of the caves, as the same water which dissolved the rock away may have also held at the same time the various minerals in solution.

I. FISSURE COMPLETELY FILLED.



A, Limestone. B, Red Clay. C, Dry-bone. D, Calamine. E, Galena. F, Heavy Spar.

These caves are sometimes completely filled, and as often only partially so, from the ores and associate minerals. The gangue usually consists of ore surrounded by red clay intermixed with calc-spar, heavy spar, and detritus from the adjacent rock, fragments of the limestone and chert. Not unfrequently, besides the galena, are alternate layers of other metalliferous deposits, as calamine (silicate of zinc), carbonate of zinc, called drybone by the miners, blende (sulphuret of zinc), iron pyrites, and brown hematite. The above association is frequently met with at the Vallé Mines. The accompanying cross section will give some idea of the cave openings.

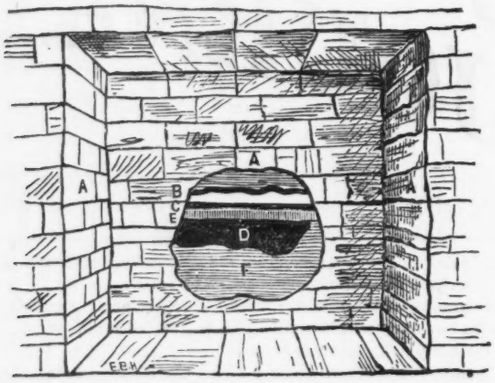
In these cave openings mining is carried on with much ease and little labor, as the contents are all removed without blasting, and when the "caves" are four or five feet high and several in width, all blasting can be dispensed with. In

* A paper read before the American Institute of Mining Engineers at the St. Louis Meeting May, 1874.

some of these caves the calamine occurs in such quantities that the mining for the zinc yields larger returns than that for lead.

The pipe-vein and stockwerk are very similar in character, with the exception, that the former is more continuous. They originated, no doubt, in the same

II. FISSURE PARTLY FILLED.

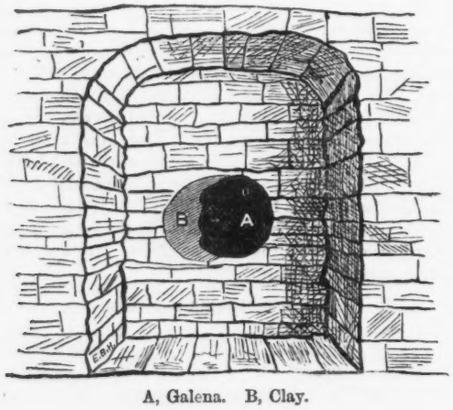


A, Clay. B, Dry Bone. C, Brown Hematite. D, Galena. E, Calamine.

way as the cave openings, and very much resemble the latter, but unlike the cave openings, they usually are entirely void of all gangue, simply being a deposit of "block-mineral." Mining in these two deposits is very precarious, as they are very rich for short distances, and then suddenly, without any warning, all traces of the ore disappear. I am acquainted with no successful mining in these two deposits.

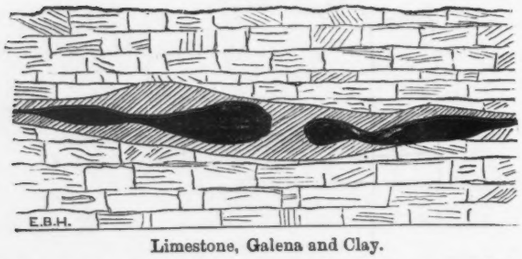
CROSS SECTION OF PIPE-VEIN.

Front View.



A, Galena. B, Clay.

Side View.



Limestone, Galena and Clay.

Besides the above, there are several other modes of occurrence of the lead ores, but they possess no economic value, and are only interesting to the scientist.

The most interesting of this class is the occurrence of galena in coal found in Monitean County. I have not yet visited this point, but possess a full suit of specimens, and can vouch for this mode of occurrence, which is thus described: "There is a bed of hard, dense cannel coal forty feet in thickness, traversed by a net-work of veins crossing each other at every angle. These veins were formed after the coal, and are now filled with galena, zinc-blende and calc-spar presenting a very conglomeratic appearance."

It is the most interesting paragenesis of minerals I have ever observed.

Questions and Answers.

3.—*M. F. M., Charleston, W. Va.*—"F. O. B.," in our market reports, is the usual contraction for "free on board," meaning that the shipping charges are included in the price quoted.

4.—"*Gas Coal*," *Halifax, N. S.*, asks, "What amount of coal is used at the gas works in New England? I see it stated in a New York coal paper, that the amount is 2,500,000 tons a year. I know the paper in question is always wild and unreliable in its figures, so I do not consider it authority. Please give us correct figures."

Answer.—The total annual consumption of coal by the New England Gas Companies is about 260,000 tons, a little more than one tenth of the amount given in the publication mentioned.

The Lidgerwood Rotary Hoisting Engines.

WITH SUPPLEMENT.

ROTARY Engines appear to have always attracted the attention and enlisted the sympathies of mechanics; we, therefore, find no end of patents for them in nearly every civilized country. Though the principle appears as simple as can be, and the advantages to be obtained by a rotary over a reciprocative motion have been universally admitted, it was not till within a very few years that any really practical machine of this description was devised. The chief difficulties have always been in the valve movement, the wear and tear incident to great speed in the running parts, and the inability to reverse the engine; though very interesting as toys and models of ingenuity, rotary engines and pumps have not generally satisfied the demands of practical heavy work. These objections appear to have been quite successfully overcome in the "Challenge Reversible Hoisting Engine," which we illustrate on our supplement. We have here the extreme of simplicity—the very first essential in a practical machine—for the engine is made up of only ten pieces, exclusive of bolts.

It consists of two cylinders, the inner one being keyed on a shaft placed eccentrically with the outer cylinder; the inner cylinder touches the outer at one point (between the two steam ports), and it is provided with three shutters, or pistons, that are kept constantly pressed out against the outer cylinder. The steam may be admitted through one or the other of the ports, thus reversing the engine by the simple movement of a lever, which works the valve; it has no center, or dead point, and will consequently start or stop at any point, whether loaded or unloaded.

The motive force is applied on the outer perifery of the smaller cylinder, and acts constantly with the same leverage, thus giving uniformity of movement and work, instead of the varying speed of the reciprocating engine. It runs without jar or shock, and, being self-contained, needs no further foundation than a support for its weight.

We have had frequent opportunity for examining the engine at work at the Anthracite Mines of Pennsylvania and can state with the greatest confidence that it is an excellent machine for almost any purpose to which we apply ordinary reciprocating engines. Owing to its simplicity it can be worked by a boy—though we believe that a good machinist is the cheapest man that can be found to run and take care of even this simple engine. It starts, stops and reverses quicker than the common engine, under the most favorable circumstances. It needs no heavy foundations, and in this effects a considerable saving. In fact it is admirably adapted for light work about the mines and furnaces; such work, for example, as sinking shafts and slopes, handling heavy weights, for driving ore dressing machines, for furnace hoists, cranes, fan engines, &c. An engine of this kind and about 80 horse-power is now being applied by Messrs. COXE BROTHERS, of Drifton, Pa., to driving breaker rolls, the engine being placed direct on the breaker shaft.

This design would have a great advantage as a pumping engine, not only on account of the large amount of water it could throw for a given size of engine, but because, having a continuous motion, the water in the column is kept in constant and uniform movement, obviating the heavy shock, danger to accident, and waste of power in starting suddenly a large body of water from a state of rest, as is done in the reciprocating engine.

At our ore mines, slate and stone quarries, on docks for loading and unloading coal, ore, or other heavy freights, the engine and boiler attached would be an exceedingly convenient and economical motor. We speak principally of the uses of this engine in connection with mines, quarries, and furnaces, as these are the questions that interest the greater number of our readers, but it has also proved itself a convenient machine for working the screw of steam yachts, for steering ships, elevator hoists, and a variety of other purposes.

The portable engine and boiler, shown in our supplement, can be arranged at a small additional expense to move itself as a road engine, which would be a great convenience in moving it to localities far removed from railroads or navigation.

Those in need of convenient light motors can find them here of all sizes and prices, from $300 upwards. And those desiring further information can obtain it by applying to the LIDGERWOOD MANUFACTURING COMPANY, 165 Pearl street, New York.

Ironstone Mining in Cleveland.*

By Mr. A. L. STEAVENSON, Durham.

GEOLOGY.—In the Marlstone series, between the Upper and Lower Lias, the main seam is found, and this has hitherto been the only one worth working, with a few exceptions, notably that of Rosedale.

NATURE OF SEAM.—The seam is a stratified bed, varying in thickness from 15 feet in one bed, on the northeast of the district, down to a few inches on the south and west, caused by splits and the intercalation of shale. The rise and dip of the seam is most irregular, and bears no relation to the surface configuration, frequently, as at Eston and Normanby, dipping three inches to the yard from the outburst, where it is 300 feet above sea-level, to 50 and 100 feet below sea-level, under the highest part of the hill, and then rising as rapidly to the outburst at the other side, while in some places faults or dislocations prevail to the extent of several fathoms.

WINNING THE SEAM.—In the year 1850, the mining, or rather, at that date, the quarrying, of ironstone began in earnest, the outcrops were uncovered, and large quantities got by this simple process,† a simplicity which has probably continued to be associated with it in the minds of many people. But in course of time, when the cover or bearing increased to upwards of twenty feet in thickness, drifting became necessary; and in the early part of 1852, when the writer first visited the Eston quarries, the use of candles in the drifts was becoming compulsory. So matters went on, there and elsewhere, until the rapid dip and increase of water led to the more serious operation of deep shaft sinking.

SINKING.—In these early days the Upsal Pit, of 120 fathoms, was the only one deserving of mention; this was successfully accomplished without difficulty, and the very large royalties there set free. Here and there pits of light depth were sunk, some, as at Brotton, having heavy feeders to contend with; but it was not until Messrs. BOLCKOW and VAUGHAN began their North Skelton shaft that a genuine difficulty was encountered.

NORTH SKELTON WINNING.—The sinking of shafts at the North Skelton mines has been remarkable for the heavy feeders of water met with. The thick beds of freestone containing it had usually been cropped out at a higher level than that upon which the sinking commenced; but in this case, with the object of having the pumping pits at the lowest point, the shafts were sunk where a convergence

* A paper read before the Iron and Steel Institute, at Barrow-in-Furness.

† "By the 2d September, 1850, the first lot of seven tons was brought down."—See Mr. Marley's paper on the Cleveland Ironstone, p. 157, vol. v., Northern Mining Institute.

of dip of the strata was certain to expose them to a rush from all sides; and such was the open nature of all the rocks and shales that, in the writer's opinion, there was very little chance of its ever being successfully tubbed off. This apparently would have been the case had not the "Top Seam of Cleveland" fortunately proved sound, and 3 feet 6 inches thick, at a depth of 64 fathoms. At 64 fathoms they were struggling with 3,320 gallons, or nearly 15 tons per minute. The engines employed, consisted of one main engine, with 65-inch cylinder and eight-feet stroke, and a temporary pair of 20-inch horizontal, with spur gear 4 to 1. Upon the main engine were hung three 20-inch sets of pumps, and two upon the other. The main engine, although not what can be called a Cornish engine, has all the advantages of that type, being similar in principle, but, from its arrangement with the piston-rod passing through the bottom and taking hold of the beam, is of an equal efficiency, at less cost, in every respect. In the shales below the freestone, little, if any, water was met with, so that, until the arrival of the time when the pillars are to be worked, all difficulty is at an end.

KILTON WINNING.—The Kilton Winning ranks next in unenviable notoriety, having for more than three years occupied the engineers and sinkers in getting down 105 fathoms, large feeders of water, amounting sometimes to 1000 gallons per minute, having been met with. In place of the sinking setts usually applied, a system of fixed engines to force to the surface has been tried. At 28 fathoms, in a drift between the two pits, was placed a double 12-inch Cameron pump, which, with the assistance of water tubs, reached to 35 fathoms. From here, a cistern of 2000 gallons was arranged to be lowered by guide ropes as the sinking progressed; upon this a vertical cylinder worked a 16-inch pump, which, delivered into the cistern and tubs working in wire rope guides, drew the water from this to the surface. By this means 45 fathoms was reached, where a 12" Tangye engine was fixed in the side of the shaft, and forced 500 gallons of water per minute. A second shaft then put down dry, upon which a small engine at the surface, with dry spears to the depth already attained, sunk to 81 fathoms, where all the water was collected, the shale below being dry—and two lifts of the pumps are now being arranged to work permanently to bank. By this system, the erection of large permanent engines was avoided until the strength of the feeders was ascertained.

WINNING BY UNDERLEVEL.—But the sinking of pits has in several instances been avoided, and in others much assisted by underlevels. At the Skelton Park Mines of Messrs. BELL Brothers, by a drift of 1000 yards, 35 fathoms were taken off a pit of 61 fathoms, the mild nature of the Lias shales rendering such an operation comparatively easy. And at Normanby, by means of one of Fowler's high-pressure engines and boilers, fit up with a clip sheave, which conveyed the power by an endless rope to a second sheave on the shaft of a large pump, the deepest point (above 200 vertical feet) was reached (the pump being moved down every 25 feet), and there a similar engine was fixed as a permanency. This continuous system of rope pumping, applied by means of the clip sheave to heavy columns, the writer believes he was the first to adopt in 1863, and it superseded a system of using two drums, with a reversal of the drums as soon as the rope had run off one drum on to the other. As to whether this plan of forcing leading drifts down to the dip, or sinking a shaft, is most preferable, can only be determined by the circumstances in each case. In adopting the former method, the machinery is within small bounds, which curtails permanent expenditure, and capital put into pipes and machinery may be partially recovered; when in shafts it is irrevocably expended.

MINING THE STONE.—In the process of getting the stone, the miner depends entirely on blasting, and to aid this, the vertical fissures (known as "backs," which prevail at short distances apart) are of great assistance. These backs appear to follow no law of cleavage as we find in the coal formation, and produce fast or free ground according as they are frequent or otherwise. In the absence of these, long deep cutting holes are drilled to supply their places. The common board and pillar system has been found most applicable. The size of the pillar varies according to the thickness of cover, but, as a rule, the writer prefers 30 yards by 20, the width of boards up to 5 yards.

BLASTING HOLES.—The holes (all jumped) are triangular, and about one-and-a half inches on each side, varying from two feet to five feet deep. A peculiarity deserving of notice is, that according to the nature of the shot to be made, the angle of the holes is made to afford flat backs, or flat fronts, a flat backed hole cutting straight up and down; but when the work to be done is too heavy to admit of this, recourse is had to a flat front, which throws out just so much as is covered by the angle of the sides.

TIMBERING.—The timbering in these high places is a very important matter. At Easton, and some others, the weight of the timber is such that three deputies work in a gang. About one deputy looks after the safety of every eight miners.

SECOND OR PILLAR WORK.—The removal of the pillars is a work requiring more skill and attention than any other. By the section of strata it will be seen that, after the thin block of ironstone left for a roof is once broken through, there is about 200 feet of shale, which bears down with a crushing weight, much more quickly than in the coal measures (where strong super-incumbent rocks bear up and hold off the rush down of the undermined strata), and chokes up the places with material not much different from clay, leaving the pillars standing. To check this, various safeguards are necessary—1st. To have large pillars and avoid drifting through them as much as possible; 2nd. Whilst maintaining carefully the angle as shown in the diagram, to take out very small parts of the pillar at one time; 3d. Where the seam is lying or dipping at an angle to get to the low side when practicable, and thus have the weight above hanging off. In this way, with a pillar of 30 yards by 20, at 10 yards from the inbye end, cut through a siding over 9 feet wide, then remove that portion of the pillar which is severed by three distinct lifts. By this means, ample strength is maintained behind to resist pressure. If, however, weight does come on, as has sometimes been the case, the effect is to force down the roof with a creeping and irresistible force, not injuring the pillars much, but gradually filling the places up with débris. A pillar so shut in may after a time be reached, the fallen material having become consolidated. From the old goaf, a good deal of stythe or carbonic acid is given off, and from symptoms frequently observed, the jet shale seems to be subject to spontaneous ignition.

MECHANICAL DRILLING.—A good miner can drill a hole five feet deep in thirty-five minutes, and the greater part of the miner's time is thus occupied, as he generally has working with him a less skilled man to break up and fill into wagons. The question of machine drilling has, therefore, had a considerable share of attention, and many attempts have been made to effect such a desideratum; amongst others there were:

Hand Auger.—First, a tool worked by hand, turned by a crank handle something like an auger.

Villepique Perforator.—Second, a very similar, but more ingenious, machine called the Villepique Perforator.

Steam Drill.—Third, a drill driven by high pressure steam, and having a percussive action.

Burleigh Rock Drill.—Fourth, the Burleigh Rock Drill. The agents admitted that the special qualities of that machine were more adapted to prove useful in harder material.

Cranston's Drill.—This machine was also considered more adapted to a hard stone.

Some account of these experiments would be more interesting, if space permitted; but the result was alike, in all cases, in favor of hand labor.

With the steam drill at 220 strokes per minute, as much as five inches per minute was sometimes reached; but the time of actual work was so small, compared with that occupied in setting up, incidental checks from steam pipes, bolts loose, holes choked, cleaning out hole, changing drill, etc., that the remaining balance in its favor was quite outweighed by the extra expense and inconvenience attendant upon such a system.

EXPLOSIVES.—From the drilling of the holes, we pass naturally to the question of explosives; and in this war of elements, the ordinary blasting powder has held a proud preëminence, when tested against almost every known substitute. In the mines of Messrs. BELL Brothers alone, from 150 to 200 tons of powder are consumed per annum, so that any improvement which can be made is highly important, and to obtain this, the writer has experimented with nitro-glycerine, dynamite, pyrolith, nitrate and chlorate of potash, Noble's blasting oil, and many varieties of gun cotton, and other compounds, but all failed, either through inefficiency or want of safety; in fact, not one of them, not even dynamite, will bear such tests for safety as powder, as can be easily demonstrated.

Nitro-Glycerine.—The nitro-glycerine did its work well, but left such a poisonous atmosphere as to be put out of the field, in a close mine, at once, had not its want of safety been so fully attested afterwards.

Gun Cotton.—Messrs. PRENTICE took infinite pains to make gun cotton a success, and placed an engineer in the district to test sample after sample, and prepared it in triangular cartridges to suit the holes, but a want of regularity in its strength was the chief cause of failure.

Dynamite was too rapid in its action, cutting the stone, but leaving it standing, where powder tears and slowly throws it down; and so, as before stated, we have to rely upon the old-fashioned saltpetre and charcoal.

VENTILATION.—Since in every mine such large quantities of powder are constantly being exploded, it is no easy matter to provide a constantly clear atmosphere, and the old-fashioned furnace and upcast pit, which worked, for the most part, under great disadvantages in Cleveland, where the shafts were shallow, has been superseded by mechanical ventilators driven by steam. Of these, there are now, upon GUIBAL'S system, six or eight, one of Cook's, with other two in course of construction.

Guibal.—The Guibal is a very clever arrangement of the centrifugal fan, with three specialties. First, it is covered in, which prevents the external air from affecting its action. Second, a sliding shutter allows of the exit being regulated to suit the speed and volume passing out. Third, a trumpet mouth or Evasée chimney delivers the air into the external atmosphere at a slow speed, thus avoiding the sudden impact of a quick current against a stationary medium. At the Huntcliff mines, with one of these fans, with a multitubular boiler and engine made by Messrs. FOWLER, results have been attained which are believed to be unequalled at the present time. The ventilator, 30 feet diameter by 10 feet wide, is connected to the engine shaft direct, and at a speed of 49 revolutions, affords 113,449 cubic feet, under 1·43 inches water gauge, whilst the consumption of coals during fourteen days was only 21 tons 1 cwt. 3 qrs. The horse power in the air equals 25·59, and in the engine 44 h.-p., or 58 per cent. of useful effect.

Æro Steam.—An experiment was made with the Normanby fan, which formed an excellent test for the application of the Æro steam at Warsop. When at work, the fan has a perfectly uniform load, one common cylindrical boiler being just a little short of the power necessary to drive it, and it appeared that, if any advantage could be gained by this system, its effect would be made easily visible; no benefit whatever was found. The work done here with plain egg-ended boilers is almost identical with that at Huntcliff, but the coals used are between four and five times more.

MECHANICAL APPLIANCES.—As a rule, the engines and machinery are much such as are to be met with in mining districts, with a few exceptions. The winding engine at North Skelton—two 36-inch cylinders and 6 feet stroke—is a very fine engine, and had a scroll drum, which has been converted into an 18½ feet plain roll. The main or pumping engine at the same place, 65-inch and 8 feet stroke, is also a splendid machine; and the winding engine at Messrs. BELL'S Skelton Park Mines, is also very powerful; but none are possessed of any great novelty. The agricultural engines of Messrs. FOWLER have been very much used. The Cliff engine, ten years ago, steamed itself from the then terminus at Saltburn, down and up the heavy hills there, and placed itself upon its bed; the hind wheels had shield boards put on and made into drums, and it has ever since drawn the stone up a 20-fathom pit, often 800 tons, with 10 cwt. of coals in ten hours.

GENERAL REMARKS.—The total quantity of ironstone* produced during last year in Cleveland was 5,435,233 tons, including a strike of 14 days; the total of England and Wales, in the same time, was 12,094,827; the nearest approach to this being North and South Staffordshire and Worcestershire, 2,749,874, or just one-half. The total hands employed are, above and below ground, 9,350; these have all collected within 20 years, mostly south countrymen; their average day's wages being about 7s. 2d., as shown upon a recent arbitration.

ACCIDENTS.—During the year, 25 lives were lost, giving an average of one death for every 217,409 tons, South Durham being the only mining district which can be said to show a better result, being one life per 235,543 tons, the next to it being East Scotland one for 156,973 tons, the average of England, Scotland, and Wales being one for 133,677.

AREA OF IRONSTONE FIELD.—Bewick, in his book upon the Cleveland ironfield, says, "the extent of this mineral field is supposed to be between 500 and 600 square miles." This, however, is very wide of the mark, or about ten times as much as can be worked to profit, all the south-west portion being unfit for use.

DISCOVERY.—The discovery does not seem to have been the work of any single man. One saw it, recognized it as ironstone, and took no further notice of it. Another saw it, tried to use it, failed, and gave it up. Whilst a third, taking advantage of what others had done, brought it into use, and completed the discovery in the year 1850. A quarter of a century has since passed, rival claims to be the leader in producing iron have been made, Belgium, Cumberland, Northampton, and even that high and dry part of the world, Cornwall, has been dinned in our ears, but while by no means sleeping at our posts, we have seen nothing yet in any of these to cause the least anxiety.

*I am indebted to Mr. Willis, Her Majesty's Inspector of Mines for the district, fo this information.

THE ENGINEERING AND MINING JOURNAL.

NEW YORK, SATURDAY, OCTOBER 3, 1874.

ROSSITER W. RAYMOND, Ph. D., Editor.
RICHARD P. ROTHWELL, C. E., M. E.,
Editor of the Coal and Iron Department.

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CONTENTS FOR THIS WEEK.

On the Occurrence of the Lead Ores in Missouri 209
The Lidgerwood Rotary Hoisting Engines. 210
Ironstone Mining in Cleveland 210
EDITORIALS :
Mr Bell in the Lehigh Valley..... 212
Pneumatic Counterbalance for Winding Engines..... 213
ENGLISH CORRESPONDENCE :
Iron and Steel Institute..... 213
CORRESPONDENCE :
Rock Drills..... 213
Mine Fires near Wilkes Barre..... 213
The Worthington Pumping Engines at Poughkeepsie 214
Notes..... 214
COAL TRADE REVIEW..... 215
Review of the British Coal and Iron Trade 217
IRON MARKET REVIEW..... 217
Metals..... 218
Miscellaneous Stock Market..... 219
Boston Stock Market..... 219
San Francisco Stock Market..... 219
American Institute of Mining Engineers.. 219
Advertisements..... 219

THE Council of the American Institute of Mining Engineers has decided upon holding the next meeting of the Institute at Hazelton, Pa., on the 27th inst. Mr. I. LOWTHIAN BELL will be present, and it is desired and expected that as many as possible of our American iron masters will come to meet our distinguished visitor. Its central location makes Hazelton easy of access to a majority of the members of the Institute, and the opportunity to examine the great anthracite mines of the district, and the furnaces on the Lehigh, will make the meeting interesting both to our mining and metallurgical members. Meanwhile, let every member make up his mind to be present, and contribute something to the interest of the occasion.

THE longest blast of a charcoal furnace yet announced is that of the Shelby Iron Company's furnace at Shelby, Alabama. It has now been working continuously for three years and seven months, and has made an average of 100 tons per week since it blew in. The greater part of the production has been an excellent iron for car wheel purposes, and its quality ranks it among our very best American irons. The ores used are limonites, yielding, when roasted, about 53 to 54 per cent. in the furnace. The consumption of charcoal has been 130 bushels (of 18½ lb.) per ton of pig iron produced. The lining of the furnace is of fire brick, made at the works from clay found in the neighborhood. The manager, under whose excellent administration these works have been so successful, both financially and metallurgically, is Mr. WALTER CRAFTS.

THE article of Mr. BUEL, in another column, on the WORTHINGTON pumping engines at Poughkeepsie, although confessedly based on very incomplete data, will be read with much interest by engineers. We wish that some competent authority like Mr. BUEL could make exact measurements and calculations on these engines, and examine thoroughly the conditions under which they are running. There are some points of the highest importance involved. Meanwhile, we must venture to differ from our accomplished contributor as regards the performance of the small Worthington pumping-engines to which he refers. It is apparent from his description that these are high-pressure engines, and must have been designed for a smaller amount of work than they are now performing. In other words, they are overworked, a condition most unfavorable even to the limited economy of steam which can be achieved without expansion. Yet Mr. BUEL finds their duty to be nearly thirteen million foot-pounds—an amount which we cannot but consider indicative of good work under the circumstances. We base our opinion on the records of every day experience, not the "duty trials" of great occasions or the paper estimates of the books. As for comparing this duty with the almost sixty-eight millions shown by the large *compound engines*, working within their normal and easy capacity, it seems to us hardly fair to the smaller p

Mr. BUEL himself suggests that perhaps the "estimate of the coal required for each has been incorrectly made." This would, of course, vitiate the whole calculation, and every opinion based on it. It used to be said of a navy engineer that he would "reckon the ashes to seven places of decimals, and guess at the coal put into the furnace." Mr. BUEL's work is not so wild as that ; but, after all, he demonstrates nothing but the impossibility of coming to any conclusions without precise data. The Worthington engines are winning a great reputation in this country ; and it is well worth while to have these performances accurately tested and fairly discussed.

WE are indebted to our valued English correspondent, Mr. GEORGE W. MAYNARD, for reports of the Barrow meeting of the Iron and Steel Institute, and for abstracts of the papers read there. We greatly regret that our space is so limited, we have had to carry over the greater part of these reports ; but we shall continue to publish such of the papers as are of most interest to our American iron masters. We give this week an excellent practical paper on iron ore mining, and shall follow it with others, and with special reports of value, by our correspondent.

Mr. Bell in the Lehigh Valley.

MR. I. LOWTHIAN BELL, President of the Iron and Steel Institute of Great Britain, whose arrival in this country we briefly chronicled in our last number, made no delay in prosecuting the main object of his visit to the United States. The day after landing, he left New York for a trip to the mines and blast furnaces of the Lehigh Valley, in company with Mr. RAYMOND. The proprietors and superintendents of works in that district, though taken by surprise, and therefore unable to make such preparations for the reception of their distinguished guest as would otherwise have awaited him, received him with prompt cordiality, and put at his disposal such facilities as enabled him to go in a short time, but with satisfactory thoroughness, over a great deal of ground.

Leaving New York on Wednesday afternoon, the party arrived that evening at Phillipsburg, where they were received by Mr. J. C. KENT, of the Andover Iron Company, at whose hospitable mansion they spent the night, after passing a pleasant evening in the company of Mr. KENT and his son, Professors DROWN and SILLIMAN, who came over from Lafayette College, at Easton, across the river, and Mr. FRANK FIRMSTONE, who came down from the Glendon Works, to meet Mr. BELL. This impromptu gathering, called together by telegraph, was highly delightful to all parties ; and the interesting discussions of blast furnace practice which sprang up between these representatives of the iron industry of two great countries afforded an excellent foretaste of the interchange of opinions and experience which we may expect when Mr. BELL meets the iron and steel engineers of the country at the October meeting of the Institute of Mining Engineers.

Thursday morning was devoted to an examination of the Andover furnaces, after which the party was driven to Glendon, stopping on the way at Lafayette College, where Mr. BELL inspected, with great interest and admiration, the magnificent preparations for technical instruction presented by the stately and well-furnished Pardee and Jenks Halls, with their lecture rooms, laboratories, and apparatus.

At Glendon, Mr. BELL enjoyed the hospitality of Mr. WILLIAM FIRMSTONE, manager of the Glendon Iron Works, and in company with him and his son, Mr. FRANCIS FIRMSTONE, made a thorough examination of the furnace, after which the party proceeded to Bethlehem, arriving at about four o'clock in the afternoon. As it was arranged to inspect the works of the Bethlehem Iron Company the next morning, the remainder of this day was devoted to an examination of the works of the Lehigh Zinc Company, and a visit to the zinc mines, where the immense pumping engine of the company, said to be the largest in the world, received its due share of attention. This engine is estimated to be adequate to raise 17,000 gallons per minute from a depth of 300 feet. At the time of this visit it was pumping about 8,000 gallons from the depth of 180 feet. Mr. BELL expressed himself in the highest terms concerning the simplicity, beauty, and efficiency of the American machinery seen during this journey, remarking particularly upon the engine of the Zinc Company, the upright blowing engines, built by I. P. MORRIS & Co., Philadelphia, and used at the Andover Works and elsewhere, and the large beam engines employed for the same purpose by the Thomas Iron Works.

A moonlight ride back to Bethlehem concluded the events of a delightful, though somewhat fatiguing, day, to the pleasure of which the beautiful scenery of the Lehigh region, and the perfect weather which attended the whole trip, contributed in no small degree. Mr. BELL was the guest on Thursday night of Mr. B. C. WEBSTER, of the Lehigh Zinc Co., who had escorted the party to the works and mines of that company. During the evening Mr. JOHN FRITZ, of the Bethlehem Iron Co., and Prof. ROEPPER, the distinguished mineralogist, called upon Mr. BELL. Mr. CHARLES ROEPPER, Chemist of the Bethlehem Company, Mr. ADAMS, foreman of the works, and others, also contributed to the interest and pleasure of this visit.

On Friday morning, an early start was made, and the works of the Bethlehem Iron Company were visited under the guidance of Messrs. HUNT and FRITZ. Mr. BELL was much interested by the peculiarities of American rolling-mill practice, as illustrated in the three-high mill of this company, and by the ingenuity and efficiency displayed in the workshops. Of course the magnificent building and

beautifully arranged plant of the new Bessemer works could not fail to command his admiration. Unfortunately the works were idle at the time, though they are expected to start in a few days; and it is to be hoped that Mr. BELL will enjoy a future opportunity of seeing them in operation. The telegraphic notices given of his visit to the Lehigh region, left no chance for any preparation of the works in anticipation of his coming. But this circumstance, while it prevented him from seeing in operation some processes and machines in which he would have been interested, had, on the other hand, the advantage, that he was able to see everything that was in operation under the conditions of actual everyday practice.

The Lehigh Valley Railroad Company, having put at his disposal a special engine and car, under the charge of Mr. SAYRE, Mr. BELL, accompanied by a party of friends, left Bethlehem for a visit to the Thomas Iron Company, at Hokendauqua. The venerable DAVID THOMAS, now nearly eighty years of age, but still, as we all know, active and strong, came down to Bethlehem early in the morning, and accompanied the party throughout the day. The meeting between him and Mr. BELL was of the most cordial character, and the two distinguished ironmasters spent much time, during the trip, in conversation. The works of the Thomas Company at Hokendauqua and Alburtis having been inspected, the party proceeded over the Fogelsville Railroad to the summit of South Mountain, stopping on the way to examine limestone quarries and ore-beds, and the beautiful iron bridge over Jordan Creek. Besides the Messrs. THOMAS, FRITZ, WEBSTER, ROEPPER, and others already mentioned, the company included, by this time, Professors FRAZIER, CHANDLER, and KIMBALL, of the Lehigh University, Mr. HARRY FIRMSTONE, formerly of the Stanhope furnace of New Jersey, and others. Professor PRIME, of Lafayette College, who had missed seeing Mr. BELL at Phillipsburg and Easton, being absent in the prosecution of his field-work on the State Geological Survey, was observed by some quick eye, from the car window, striding over the open country. The car was stopped, and the steam whistle was vigorously plied; but for some time the Professor remained deaf to all signals, being intensely occupied in counting his paces. By dint of perseverance, however, his attention was at last attracted and a committee triumphantly brought him on board.

Returning the same afternoon to Bethlehem, the party were entertained at dinner by Mr. FRITZ, after which Mr. BELL departed by the evening train, arriving the same night at Stanhope, New Jersey. Messrs. WILLIAM and HARRY FIRMSTONE accompanied him to this place, where they were received by Dr. PALMER, Superintendent of the iron works. The next morning the Stanhope furnaces were inspected, one of which is noted as having the greatest height (80 feet) yet attained in anthracite blast furnaces. The Morris Canal happens to have, at this point, a plane, over which boats are drawn, instead of being lifted in locks. This peculiar specimen of engineering was witnessed with great interest by Mr. BELL.

From Stanhope the party proceeded in carriages to some of the iron mines near Dover, particularly the famous Dickerson mine, where considerable time was spent. A dinner at Dover and an express train to New York concluded the experiences of three busy and interesting days. Mr. BELL arrived at New York in time to take the steamboat for Newport, where he is the guest of Mr. EDWARD COOPER.

We understand that it is his intention to visit the districts of Lake Champlain, Lake Superior and Missouri, and the coke and raw coal furnaces of the West, during the month of October. He will be at the October meeting of the Institute on the 27th, without fail, and after that meeting, will probably visit the iron districts of the South. Details of his plans are, of course, not yet fixed; but we have no doubt that he will be everywhere received with enthusiastic hospitality. There is not an iron-master worthy of the name in the United States who would not be glad to shake hands with LOWTHIAN BELL. We should have mentioned above that he is attended on his journey through this country by his son, Mr. CHARLES BELL, a graduate of the *Ecole des Mines*, at Paris.

Pneumatic Counterbalance for Winding Engines.

MR. CHAS. T. OWEN, Engineer, of Chesterfield, England, proposes to use compressed air as a counterbalance, instead of chains at use in some pits, or cone drums as in other places. The new system proposes having a compressor cylinder driven either direct, on the same piston rod, or indirectly off the drum shaft; this compressor pumps air into one or the other of two receivers, one of these is empty when one cap is at the bottom and the other is at its highest state of compression. The same reversing handle turns the steam on the steam cylinder and the compressed air on to its cylinder, it therefore assists the engine till the cages pass in the middle of the shaft, when the compressing cylinder retards the engine. It is claimed that by using this counterbalance less steam may be used to raise the same weight, and it is expected to effect an economy in the fuel used. This contrivance, though not new in principle, is ingenious in design and will shortly be admitted to practical test.

ENGLISH CORRESPONDENCE.

Iron and Steel Institute.

BARROW-IN-FURNESS, Sept. 4, 1874.

TO THE EDITOR: SIR—The last, and one of the most important papers of the meeting, was read by Mr. T. R. CRAMPTON, on his "*Revolving Furnace and its Products.*" Unfortunately the lateness of the hour made it impossible to devote sufficient time to discussion. Mr. PRICE, master of the Forge at Woolwich, spoke in very high terms of the furnace, and expressed the opinion that there was now no obstacle to success. Through the kindness of Mr. CRAMPTON I have made a careful investigation of the working of his furnace, and I shall make it the subject of a separate letter, accompanied with drawings.

After the usual vote of thanks to the Mayor and Corporation, the Local Committee, and others, a special train conveyed the visitors, in part, to the Millom Iron Works and Hodbarrow Mines, and in part to the Askam Iron Works and Park Mines. The Askam furnaces are the property of the "Furness Iron and Steel Company." They are the largest furnaces working on hematites in the district. There are four in all, viz.: two new furnaces—height, 75 feet; bosh, 23 feet; hearth, 8 feet; bell, 14 feet; and two small furnaces—height, 67 feet; bosh, 19 feet; hearth, 7 feet; bell, 12½ feet. All the furnaces have 5 tuyeres each; nozzle diameter, 5½ and 6 inches. Blast pressure, 4 lb.; total weekly make for all furnaces, 1,200 tons Bessemer iron. The arrangement of the plant is as good as can be.

MR. WILLIAM CROSSELY is the manager of the works, which were erected after the designs and under the superintendence of Mr. RILEY, now General Superintendent of the Landore Siemens Steel Works at Landore, South Wales, and to whom, on my own behalf and in the name of all Americans who have been the recipients of his kind attentions, both at Landore and Askam, I wish in this public way to express sincere thanks. Notwithstanding RILEY'S holy horror of the "interviewing" Yankee engineer, with his inevitable note-book and lead pencil, he somehow can't help treating him in a most royal manner and telling him all he wants to know, and, best of all, telling him the truth. His information is a little more accurate than that of the young man at the Carnforth furnaces, who replied to our questions as to dimensions of the furnaces, "Well, they are between 50 and 60 feet high, and 15 to 20 feet bosh." G. W. M.

CORRESPONDENCE.

Rock Drills.

NEW YORK, September 10, 1874.

TO THE EDITOR: SIR—In your number of August 22, you published a paper read before the American Institute of Mining Engineers by Mr. E. GYBBON SPILLSBURY on Rock Drilling Machinery. After calling attention to the failure in the past to make drills that would last and do the work economically, he speaks of only four rock drills as of present importance, adding that "a fifth, Wood's drill, has never been practically tested." Regretting the partizan jealousies which render practically valueless the tests made recently at Port Henry, Mr. SPILLSBURY immediately makes himself the champion of the Ingersoll and the Waring drills that he considers the nearest perfection. His admittedly correct record of the breakage of the former is a sad comment on its perfection. This was the first competitive trial of the Waring Drill, and though it ran only 32½ hours the breakage proved it to be far from perfect. Mr. SPILLSBURY has done injustice to the Wood Drill which has gone successfully through the severest and most protracted trials, as he should have known, if he did not, before writing a paper on rock drills for so eminent a body as the Institute of Mining Engineers. One man has run a 3-inch Wood Drill for the past ten months in a limestone quarry, using it in all kinds of weather, sometimes starting it when covered with ice; during this time it has required repairs but twice, once being for a spring (costing 15 cents) on the feed device, and once a stuffing-box costing $2. This machine weighs 190 lb., and is used for making holes 2½ inches diameter, 10 feet deep, and the owner states that it has saved him more than its cost, in this time. Another 3-inch drill has run for 60 days in Quincy Granite without any cost for repairs. It will drill from 40 to 50 feet of 2½ inch holes per day. A third 3-inch drill has been used in sinking a shaft for 2½ months, and has not been out once for repairs, nor has it caused the slightest delay. Three more of these machines have been running three months in drifts in California, and are still in perfect working order. I might mention many other examples to prove that the Wood drill has been practically tested, and that it deserves the first place among the rock drills of to-day. Mr. SPILLSBURY, or any body interested, can get full particulars and see the drill at work by applying to Prof. WOOD in Hoboken.

JAMES H. VAN VLEET.

Mine Fires near Wilkes-Barre.

WILKES-BARRE, Pa., Sept. 29, 1874.

TO THE EDITOR: SIR—Considerable trouble has occurred at the fire in the Baltimore mine from the caving in of the surface, from time to time, which furnished openings for ventilation. It is anticipated that they will have more trouble from this cause, as many of the pillars are weak, and in contact with the fire, will soon crumble. About two weeks ago, while some workmen were filling in a crevice, the surface gave way, and one of the men was precipitated into the mines, and although he was rescued immediately, he did not escape without a severe burning. Steam is conducted into the mines at three places, by two 5 in. and one 3 in. pipe. The pressure of steam carried in the boilers ranges from 70 to 85 lb. Where, a few weeks ago, to place your hand on a test pipe, you would burn it, now it is cold, and what escapes is only warm. From this they suppose that the steam is having effect in extinguishing the fire.

The Kidder slope fire (Lackawanna and Western Coal Company) is supposed to be "going out." No one has been able to examine the ground yet, on account of the black damp, and it is not considered safe to reopen the place yet. Some, indeed, think the fire is not yet out. G.

The Worthington Pumping Engines at Poughkeepsie.

By RICHARD H. BUEL.

THE writer, in company with Mr. THERON SKEEL, of the Morgan Iron Works, recently visited the city of Poughkeepsie, for the purpose of examining the pumping machinery at that place. Through the kindness of the Superintendent of the Water Works, Mr. THEODORE W. DAVIS, the visit was rendered exceptionally pleasant and interesting, and every opportunity was afforded for making a thorough inspection. It is believed that some account of the machinery employed at Poughkeepsie will be of general interest, since there are some novel features in the system.

The pumping engines are situated about two miles north of the city, near the Hudson River. The water is drawn from the river by small duplex pumping engines—Worthington's patent—having two steam cylinders, with a diameter of 14 inches each, and two water cylinders, 17½ inches in diameter, the average length of stroke being 14 inches. The steam is not expanded in these engines, and they are arranged so that the exhaust steam can be turned into the condensor of the main pumps, or into the atmosphere. The capacity of these pumps is about 2,000,000 U. S. gallons in 24 hours. The water is forced into a basin 33 feet above mean tide, and from this basin it passes into filter-beds, flowing through layers of sand, gravel and broken stones, into a clear water basin, which is connected with the receiving pipe of the main pumping engines. The necessity for these filter-beds, or some similar arrangement, is shown by the fact that they become choked about once a month so that the water will not pass through them. The stoppage appears to be caused by the formation of a layer of clay on top of the sand, very thin, but perfectly water-tight. When this takes place it is necessary to clean the beds, removing about an inch of the first layer of sand and replacing it with fresh material. The filter-beds are at present much larger than are required, but it is impossible to use one of them independently. It would seem desirable to arrange them so that this could be effected, when it would be possible to clean them, one at a time, without causing a stoppage of the pumping. The walls of the filter-beds are vertical; and it is not surprising to hear that, in winter, men must continually break the ice that forms, to prevent it exerting an injurious side-pressure. It is usual, in work of this kind, to construct the walls with an inclination, so that they may be less subject to the action of ice.

As already stated, the water is drawn from the clear-water basin by the large pumping engines, which are of the compound variety. These engines force the water through a main, 18 inches in diameter and 7,590 feet long, to the reservoir, 268·8 feet above the delivery-valves of the pump. The reservoir holds between 11 and 12 million U. S. gallons, and the average daily consumption of water at present is 1,000,000 gallons. The principal dimensions of the large pumping engines are as follows:

Number of steam cylinders		4
" water "		2
Diameter of high-pressure cylinders	43·3	inches
" low " "	25	"
" pump "	17½	"
" " rods	3½	"
Average length of stroke	36	"

These pumps have a capacity of 3,000,000 gallons in 24 hours. It will be observed that they have a greater capacity than the small pumps which force water up to the filter-beds. The latter are to be replaced by pumps of suitable size, and this will doubtless result in considerable saving, as the main engines can be run faster, when they will give greater efficiency than at present, and it will not be necessary to keep them in operation so long each day. There are three boilers for furnishing steam to the engines, but it is found that two are more than sufficient, so that there is good opportunity for economical working. An automatic damper regulator attached to each boiler would probably prove very efficient in aiding economical combustion. Each boiler is 5 feet in diameter and 16 feet long, and contains 80 tubes, 3 inches in diameter, with a grate surface of 27·5 square feet. The chimney, common to the three boilers, has a sectional area of 9 square feet, and is 110 feet high.

At the time of the writer's visit it had been found necessary to clean the reservoir, and the engines were furnishing the supply by keeping up a pressure in the mains. This was done by maintaining a pressure at the pump a little less than sufficient to force the water into the reservoir. This gave all the advantages claimed by advocates of the Holly system, with the additional security that if at any time the pressure at the pump should be exceeded, the water, instead of straining the pipes, would escape into the reservoir. The high pressure in the mains makes every hydrant a fire-engine; so that Poughkeepsie—a city of more than 20,000 inhabitants—feels amply secure with two steam fire-engines, for use in places remote from the hydrants. An experiment to show the value of a hydrant as a fire-engine was made for the benefit of the visitors, 100 feet of hose being attached to a hydrant, while the pressure was that due to a head of 182 feet, water being thrown through a 1¼-inch nozzle to a distance of 140 feet.

Did space permit, some description would be given of the delightful visit to the Hudson River State Hospital, just north of Poughkeepsie, with an account of the pumping system, ventilating arrangements, &c., of that institution. The visitors are under many obligations to Dr. CLEAVELAND for his courteous reception and kind attentions.

In conclusion, it may be well to give some record of what the pumping engines at Poughkeepsie are doing, from such data as were obtained. These are not, however, as complete as could be desired. No counter is attached to the small pumping engines, so that their speed is merely estimated; neither have any measurements been made, to determine whether the delivery of the pumps is equal to the displacement of their pistons. The estimate of coal required for each pump is probably only approximately correct. The amount of water evaporated by the boilers, the quality of the steam, the water used per horse-power per hour by the engines, and the relative efficiency of the engines and pumps, are also matters that have not, as yet, been determined by experiment.

The following are the average results per working day, taken from a week's record, as noted at the engine-house:—

Coal, per day, used by small engines	2,175	pounds.
" " " main "	3,261	"
" " " in banking fires	983	"
Total coal per day	6,419	"
Ashes "	913	"
Number of boilers in use	2	
Number of strokes of main engines per day	28,017	
" " small " "	86,987	
" " main " per minute	41·7	
" " small " "	105	
Average length of stroke of main engines	36	inches.
" " " small "	14	"
Running time of main engines	11 hours, 16	minutes.
" " small "	13 " 43	"
Pressure of steam	40	pounds.
Vacuum in condensers	28	inches.
Leak in filter-beds while engines were running, per day	13,538	U. S. gallons.
Water pumped by large engines per day	1,008,617	" "
" " small " "	1,022,155	" "

Assuming these data as correct, the performance of the engines can easily be ascertained. It would seem proper to charge the coal for banking the fires to the cost of running the engines, since, if the fires were hauled every night, probably more fuel would be consumed in starting them fresh each morning. Dividing it in the proportion in which coal is charged to the two engines, the coal consumed for the large engines per day would be 3,809 pounds, and for the small engines, 2,610 pounds. The small pumps lift the water through a height of 33 feet, so that the total work performed by them, per day, is 281,317,443 foot-pounds. The large engines lift the water through a height, including the friction in the pipes, as shown by gauge, of 279.3 feet; or, diminished by the head under which the water flows into the main pipes, 263.2 feet. The work of the main pumps per day thus amounts to 2,214,003,131 foot-pounds, and the total useful work of both pumps per day is 2,495,320,574 foot-pounds. In performing this work, 6,419 pounds of coal are consumed; so that the duty of the pumps, or the amount of work done by the consumption of 100 pounds of coal, is 38,873,977 foot-pounds.

For the purpose of further comparison, the separate duty of each set of pumps, calculated in the same manner, is given below:—

Duty of small pumps.....10,778,446 foot-pounds.
Duty of large pumps.....58,125,574 foot-pounds.

The amount of duty, calculated from the coal burned per day, exclusive of that required for banking fires, will be as follows:

Whole duty	45,903,616	foot-pounds.
Small pumps	12,934,131	"
Large pumps	67,893,380	"

As tests of pumping engines are ordinarily made, the amount of coal used during the trial only is considered, and these results are more strictly comparable with the records of the performance of other engines, than the preceding calculations, in which the coal used for banking fires is added.

From the extraordinary difference in the duty of the two sets of pumps, it would seem that the estimate of the coal required for each has been incorrectly made. Be that as it may, the efficiency realized is far less than might have been expected from mechanism of this kind. The WORTHINGTON pumping engines at Phœnixville, Pa., with a capacity of only 1,000,000 gallons in 24 hours, erected under a guarantee of 45,000,000 duty, gave, when tested, a duty of 70,422,306 foot-pounds. The large engines at Poughkeepsie ought certainly to perform as high a duty as this; and the results obtained from similar engines elsewhere give strong assurance that the defects in the mechanism or management, if any, could readily be discovered and remedied. It is useless to speculate on the causes that have operated to produce the low duty in the present case. It is probable that they could only be determined by a careful test, embracing the details referred to in a former part of this paper.

Notes.

The price of bituminous coal has advanced in the St. Louis market a little more than half a cent a bushel, in consequence of the strike at the mines in St. Clair County, Ill.

The Strike Among the Coal Miners in the Belleville district has resulted in an advance in the price of mining from 3½ to 4 cents a bushel. A few of the operators still hold out against the advance, but it has been generally acceded to.

The following Levels may be useful to refer to, as exhibiting the general surface of the West. Lake Ontario is 232 feet above tide water; Lake Erie 283; Huron 296; Superior 314. Beaver, Pa., 127 feet above Lake Erie; Akron, O., 395; St. Mary's, O., 398; Fort Wayne, Ind., 181; Lockport, Ills., 30; Fort Winnebago, W. T., 144. The general fall of the Ohio river is thus pointed out: Low water in the Ohio at Pittsburgh 140 feet above Lake Erie. Portsmouth 94 feet, Cincinnati 133 feet, Evansville 245 feet—all below Lake Erie. This is, of course, a fall in the river (Ohio), from Pittsburgh to Evansville, of 385 feet in 792 miles, equal to but six inches in the mile. This is a descent much less than is really supposed to be the fact, but these are the results of actual surveys and measurements, in the Surveyor General's office for this district.

COAL TRADE REVIEW.

Import Duty on Coal.

Anthracite free. *Bituminous*, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c., gold.

Not otherwise provided for, per ton, 40c. gold.

This is the only report published that gives full and accurate returns of the production of our Anthracite mines.

NEW YORK, Oct. 2, 1874.

The Production of Anthracite Coal for the week ending Sept. 26, 1874, was as follows:

Tons of 2240 lb.

	WEEK. Tons.	YEAR* Tons.
Wyoming Region.		
Delaware and Hudson Canal Co	54,981	1,732,447
Delaware, Lackawanna and Western R.R	55,415	1,811,567
Pennsylvania Coal Co	28,758	972,416
Lehigh Valley R.R.	12,968	703,335
Pennsylvania and New York R.R	1,016	44,963
Central Railroad of New Jersey	37,318	1,017,945
Sold at the mines by L. & W. C. Co.	255	14,504
	190,711	6,297,177
Lehigh Region.		
Lehigh Valley R.R.	52,422	2,325,678
Central Railroad of New Jersey	34,659	820,946
Danville, Hazleton & W. B. R.R.,	956	28,711
	88,037	3,174,335
Schuylkill Region.		
Philadelphia and Reading R.R	148,569	3,543,242
Shamokin and Lykens Valley	15,663	659,400
	164,232	4,202,642
Sullivan Region.		
Sullivan and Erie R.R	1,011	27,806
Total of all the regions	443,991	13,701,960

* Year beginning Jan. 1.

The following table does not give the entire production of our bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending Sept. 26, was as follows:

Tons of 2000 lb.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Cumberland and Pennsylvania R.R.	52,570	1,687,162
Cumberland Branch R.R.	6,690	201,498
Barclay Region, Pa.		
Barclay R.R. gross tons	5,578	250,357
Broad Top Region, Pa.		
Huntingdon & Broad Top R.R.	2,764	171,108
Reports to September 19th.		
Clearfield, Region, Pa.		
Snow Shoe	826	44,623
Tyrone and Clearfield	14,178	447,992
Allegheny Region, Pa.		
Pennsylvania R.R.	3,742	154,669
Pittsburgh Region, Pa.		
West Penn. R.R.	3,720	142,522
Southwest Penn. R.R.	54	5,219
Penn. and Westmoreland gas coal, Pa. R.R.	15,020	662,052
Pennsylvania R.R.	12,638	332,053
Kanawha Region, W. Va.		
Chesapeake and Ohio R.R.	1,957	102,126
Shipments from *Block House Region, N. S.*, to Sept. 19.		
Consigned to the Provinces, tons 2240 lb.	1,091	10,637
" " " United States " " "	508	13,799
Shipments from *Pictou Region, N. S.*, to Sept. 19.		
Consigned to the United States tons 2240 lb.	2,043	41,390
" " " West Indies " " "	486	5,853
" " Canada " " "	6,277	84,085
" " Other provinces " " "	3,601	49,407

The Production of Coke for the week ending Sept. 19.

Tons of 2000 lb.

	Tons.	Year. Tons.
Tyrone and Clearfield	14	569
West Penn. R.R., " " " " "	306	9,648
Southwest Penn. R.R " " " " "	10,790	293,834
Gas Coal, Penn. R.R. " " " " "	770	27,250
Pittsburgh Coal, Penn. R.R. " " " "	742	49,635

The production of Anthracite for the week ending Sept. 26th was as follows: Wyoming Region 190,711 tons, being 1,560 tons less than the preceding week. In the Lehigh region, 88,037 tons, or 14,907 tons less than the week before, and in the Schuylkill region, 164,232 tons, being 44,306 tons more than the preceding week.

The total production of Anthracite from all the regions was for the week 443,991 tons, as against 415,384 tons the preceding week, and 477,514 tons for the corresponding week last year. From January 1st to Sept. 26th, there were produced 13,701,960 tons, as against 14,836,878 tons for the same period last year. The figures of last year's production are taken from the Pottsville *Miners' Journal*.

The Delaware and Hudson Canal Company has on stock at Honesdale 125,000 tons, at Rondout 50,000, and at Weehawken 10,000 tons.

The receipts at Port Richmond were 50,000 tons; shipments, 58,000 tons; and balance on hand 46,000.

The receipts at Greenwich, Philadelphia, were: bituminous 4286 tons, and gas coals 1290 tons; shipments: bituminous 4163 tons, and gas coals 3416 tons; balance on hand: bituminous 2479 tons, and gas coals 2327 tons.

The production of Cumberland coal from January 1st to Sept. 26th, inclusive, was 1,888,660 net tons of 2000 lb. The production for the week was 59,260 tons, as compared with 72,459 tons for the corresponding week, and 1,659,226 tons up to the corresponding date 1873—this is a total decrease for the year, thus far, of 129,43 net tons.

The receipts of coal by the Michigan Southern RR. at Buffalo for the week were tons. The shipments by Lake for the same period were 7, ton .

The receipts of Cumberland Coal at Locust Point (Baltimore) for the week were 20,210 tons; of West Virginia gas coal 2910 tons.

Exports of coal from Baltimore from 1st January to 1st September, 61,787 tons as against 52,756 tons in the same time last year.

	week	year 1874.	year 1873.
The receipts of coal at Coal Port (Trenton),	4,834	207,101	270,411
" " " South Amboy	10,900	470,417	359,921
Shipments at Coal Port (Trenton),	5,381	208,114	272,986
" at South Amboy	13,686	468,895	343,749

We will publish next week, or as soon as our reports are all in, a statement of the coal production for the nine months of the year.

The cold weather of the last few days has reminded householders of the need of coal, and there is a greatly increased demand in that direction; but, on the other hand, the cotton mills of New England have generally agreed to shorten work about one-third, or to 44 hours a week, for the next three months. This will necessarily curtail this coal market somewhat. The reopening of some of our rail mills is offset by the proposed blowing out of some furnaces, for the iron market appears still more depressed than it has hitherto been this year; and so the very brisk demand that some of the papers predicted week after week, for this month, has faded away as we approach the time set for its coming. There is no prospect of the market being able to take the full amount of the programme next month; the general impression among coal men is, that a reduction of 25 or 33 per cent. will be ordered. Prices will undoubtedly be advanced 15c. in November, as per programme, though the contrary has been stated in some of the papers. There is some uneasiness as to the course that will be followed after November. It is thought that the large companies will try to maintain prices during December, but the Pennsylvania Coal Company and many of the dealers will certainly reduce their quotations. In fact, the Pennsylvania Coal Company, though advancing the price for October delivery to contractors 10c per ton on lump, steamer, stove and egg, and 5c. on grate and chestnut, is already shading down from the programme which calls for an advance of 15c. through the list.

The bituminous trade is still inactive; though the demand for house coals is better, prices are unchanged. Our correspondents in Baltimore give a full report of the condition of trade in Cumberland coal. The condition of trade throughout the country will be found correctly reported under appropriate heads.

The Chesapeake and Ohio Canal Commission have issued orders along the line that the license of any captain or owner of a boat who interferes in any way with the movements of any licensed boat, shall be immediately withdrawn. It is hoped that this will tend to stop the system now in force there, by which the boatmen, who have paid for their boats and are free from the incubus of "trippage," are prevented by force or intimidation from carrying coal at such rates as are satisfactory to them.

In these times, when the closest management is necessary to insure even a moderate dividend on the capital invested in coal mines, it should be scarcely necessary to do more than merely indicate the existence of so serious a "leak" as appears to have been sprung by some of the Cumberland companies, in order to have it stopped.

At the Scranton sale of the 30th ult., 60,000 tons were sold at the following prices:

6,000 tons Steamer	$5 23
15,000 " Broken	5 25
6,000 " Egg	5 35
25,000 " Stove	6 04
8,000 " Chestnut	4 90
Average price	$5 50

Adding 15 cents, the commission officially allowed by the combination, would make these prices, as compared with programme prices, 12 cents less on Steamer; 20 cents less on Broken; 25 cents less on Egg; 1 cent less on Stove, and 9 cents less on Chestnut, being an average of 10½ cents per ton less than programme quotations.

We have noted somewhat similar results for each of the sales, and the natural inference is that either the Combination must allow more than 15 cents commission to contractors, or dealers can do better by buying, from month to month, at the sales than in making season contracts. Of course, the coal is always bid up to these figures, on account of the Combination, for no such prices could be obtained in the open market. There is more and more shading of prices by dealers as the season advances, and the time for an official reduction draws near.

The following are the quotations for October of Mr. Frederic A. Potts, one of our most reliable and enterprising coal merchants:

SPECIAL COALS.	Lump.	Steamer.	Broken.	Egg.	Stove.	Chestnut.
Wilkes-Barre	5 40	5 50	5 60	5 75	6 25	5 20
Old Company Lehigh	6 35	....	6 30	6 30	6 45	5 50
Plymouth Red Ash	....	....	5 60	5 75	6 35	5 20
Honeybrook Lehigh	6 20	....	6 15	6 15	6 30	5 35
Spring Brook	6 20	....	6 15	6 15	6 30	5 35
Room Run	5 85	....	5 85	5 85	6 20	5 20
Fulton Lehigh	6 35	....	6 30	6 30	6 45	5 50
Scranton	5 40	5 50	5 60	5 75	6 25	5 20

Cargo Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn, at Greenwich, Phila.	$6 25	$7 65
" " at S. Amboy	7 00	....
Red Bank Cannel Pa., at Phil.	8 50	9 50
" " at S. Amboy	9 00	....
" Orrel, "	7 00	7 65
" " at Phil.	6 25	....
Youghiogheny, Waverly Co, at Baltimore	6 00	7 65
Despard, West Va. "	5 50	7 40
Murphy Run, W. Va. at Baltimore	5 50	7 40
Fairmount, W. Va "	5 50	7 40
Newburgh Orrel, Md. "	5 50	40
Cannelton Cannel, W. Va., at Richmond.	11 00	12 80
" Spliut, " "	5 50	7 50
Peytona Cannel, " "	....	12 50
Sterling " Ohio	....	14 00
Straitsville, " Lyonsdale Cannel	....	11 50
At Sandusky, O.	3 90	....

FOREIGN GAS COALS.

	Sterling.	Am. cur'cy.
Newcastle, at Newcastle-on-Tyne	12/@13/6	7 00@ 8 00
Liverpool House Orrel, at Liverpool	29/	13 00
Ince Hall Cannel "	52/	18 00
" Gas Cannel "	40/	15 00
Scotch Gas Cannel, at Glasgow, nominal.	28/	9 50
	Gold.	
Block House, at Cow Bay, N.S.	2 25	6 50
Caledonia, at Port Caledonia	1 87½	5 70
Glace Bay, at Glace Bay	2 00	5 50
Lingan, at Lingan Bay	2 25	6 50
Sydney, International and Reserve mines, at Sydney	2 25	5 75
Pictou, Albion and Vale mines, at Pictou	2 50	6 50

STEAM AND HOUSE COALS.

Broad Top, at the mine, $1 25; at Port Richmond, Phil	4 75@5 00	6 00@6 25
Cumberland, at Georgetown and Alexandria, Va.	4 30@4 40	6 50@6 75
Clearfield, " Derby," " Kitanning" "Sterling," at the mines, $1 25; at Greenwich, Phil	4 75@5 00	6 25
James River, carbonite, at Richmond, Va	6 75	9 00
" bituminous, "	4 00	6 25

Retail Prices in New York.

Per ton of 2000 lb.

Liverpool House Orrel,	$20 00@22 00
Liverpool House Cannel,	....@25 00
American Block,	16 00@....
Straitsville Cannel	16 00@....
Carbonite	12 00@....

Wholesale Prices for Oct. of Anthracite f.o.b., at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
†Lackawanna and Scranton at Elizabethport & Hoboken	5 40	5 50	5 60	5 75	6 25	5 20
‡Pittston at Newburgh	5 00	5 00	5 10	5 30	5 75	4 70
Wilkesbarre at Port Johnston	5 40	5 50	5 60	5 75	6 25	5 20
Plymouth, R. A.	....	....	5 60	5 75	6 35	5 20
Susque. Coal Co. at Amboy W.A.	5 40	5 50	5 60	5 75	6 35	5 20
Kingston at Hoboken	5 40	5 50	5 60	5 75	6 25	5 20
Lehigh Coals.						
Old Company at Port Johnston	6 35	....	6 30	6 30	6 45	5 50
Old Company's Room Run "	5 85	....	5 85	5 85	6 20	5 20
Sugar Loaf at "	6 35	....	6 30	6 30	6 30	5 35
Lehigh Coal Exchange "	6 20	....	6 15	6 15	6 30	5 35
Honey Brook at Elizabethport	6 20	....	6 15	6 15	6 30	5 35
Spring Mt. C. Co. at Hoboken	6 20	....	6 15	6 15	6 30	5 35
Beaver Meadow at South Amboy	6 20	....	6 15	6 15	6 30	5 35
Schuylkill Coals at Port Richmond.						
Schuylkill white ash	4 90	5 00	5 10	5 25	5 75	4 30
Schuylkill red ash	...	....	5 25	5 35	5 80	4 40
Shamokin white and red ash	....	....	....	5 25	5 80	4 45
N. Franklin	....	....	5 70	5 75	5 75	4 45
Lorberry	....	....	6 05	6 05	6 05	4 65
Lykens Valley	....	....	....	6 70	6 70	5 25

† f.o. b. in New York Harbor.

‡ These are the rates for Pittston coal on registered contracts only. Buyers not having contracts will be charged 15 cents per ton in addition to the above prices.

Freight from		Per ton.
Hoboken and Weehawken to New York		40c.
Elizabethport & Port Johnston to New York		40c.
South Amboy to New York		45c.
Newburgh to New York		65c.
Port Richmond, "Phila." to N. Y. alongside		95c.
Rondout to New York by boat or barges of the D. & H. Canal Co. "delivered"		50c.

Retail Prices.

per 2000 lb. are as follows:

	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 00	$6 20	$5 40
Delaware & Hudson, delivered	7 35	7 60	6 85
Scranton, in yard	7 25	7 50	6 80
Wilkes-Barre, delivered	7 10	7 35	6 60
Lehigh & Locust Mountain,	7 50	8 00	7 00
Schuylkill Red Ash	8 25		
Cumberland	8 00		

Coal Trade of Philadelphia.

PHILADELPHIA, Sept. 30, 1874.

Bituminous Coal, Wholesale.

Penn. and Westmoreland (Gas), f.o.b., Greenwich	6 25
Broad Top, (according to destination) f.o.b., Port Richmond	4 75@5 00
Clearfield f.o.b. at Greenwich, according to destination	4 75@5 00

Bituminous, Retail.

$ 2 50 per yard, per 2240 lb., cartage added.

Baltimore, Md.

Sept. 30, 1874.

Reported by our Special Correspondent.

Shipments of Cumberland coal from this port are falling off week by week as compared with previous years, and in fact the trade was never known to be so dull since the war. The production of all the companies has been greatly reduced, and in the face of such a market light stocks of coal are being held on the wharves. Prices nominally are $4 75, although sales are being at 10c.@15c. off this.

The prospects for the balance of the year are anything but encouraging, as most of the consumers East availed themselves of the low rates of freights and have laid in their stocks; hence it looks to us as if the trade would continue light and unremunerative for the balance of this season, and that the good time so much talked about will not reach this trade before the new year.

Receipts last week at Locust Point were 20,210 tons Cumberland and 2910 tons W. Va., gas.

Freights low; few vessels here, and none under 500 tons seeking loads.

Another correspondent, under the same date, writes:

"There is no change in the Cumberland tradesince our quotations of the 23d inst. A vessel of about 800 tons capacity, loaded for Hoboken this week at $1 per ton. This is the lowest rate at which coal has been shipped from here since 1860. Large buyers should not neglect this opportunity for getting coal delivered to them cheaply."

WHOLESALE PRICES PER 2240 lb.

ANTHRACITE.

	afloat.	at depot.
Wilkes-Barre, "Lee," or "Diamond,"		
Lump, steamboat	$5 00	$5 40
Broken	5 25	5 50
Egg	5 62	5 90
Stove	5 82	6 10
Pittston and Plymouth.		
Lump, steamboat, and broken	....	5 45
Egg	....	5 80
Stove	....	6 00
Lykens Valley, red ash, all sizes	6 00	6 30

From wharf or yard, wholesale, 50@75c. additional.
By retail, all kinds and sizes, per 2,240 lb, $7@8 00.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point for cargoes	4 60	4 75
West Va. Gas Coal f. o. b. at Locust Point	5 50	....
Kanawha Cannel, coarse	13 00	....
Tyrone	7 25	....
Ritchie Mineral of West Virginia	1 00	....

Boston.

Sept. 30, 1874.

Reported by our special correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$ 5 75	Westmoreland	7 75
Caledonia	5 10	Waverly Co. Youghiogh'y	7 75
Pictou	6 15	Cannelton Cannel	13 50
Block House	5 60	Cumberland	5 90@ 6 20
Red Bank Cannel	10 00	Anthracite,	6 50@ 7 00
Glace Bay	5 40	" Retail	8 00
Sydney	7 25		

From the *Commercial Bulletin* of September 26.

The market continues to rule very dull and unsatisfactory. There is a small request for broken for house, furnace and boiler purposes, but there is no urgent demand developed with it, hence agents are not pressing their companies for shipments. So far the July orders of the Reading and Pennsylvania on broken have not been filled. Stove coal is plenty. Several cargoes have been offered during the week at $6 75 for white ash, and it is generally offering through one bridge at the price. We note one cargo 330 tons through three bridges wavering the tariff.

The circulars of the companies for the October and last 15 cents advance for the year, have been received, but have not quickened the market. The fact is still patent that our yards are well supplied for the retailing necessities, while the steam users' needs seem to indicate a smaller consumption this winter than we had earlier predicted.

Bituminous is very slack. We notice that the gas company's yards and sheds are overrun, and that they have built a rack on Fisk's wharf and filled it with Pictou, about 200 tons, while two of the old iron sheds now hold 130 tons Cannel. The ship *Confidence*, from Liverpool, lies at Constitution Wharf and is peddling out her 300 tons of Cannel at $22 a ton. Georgetown is offering here in the stream at $5 70.

Burlington, Iowa.

Sept. 26, 1874.

Specially reported by Messrs. WIGHTMAN & CUMMINGS wholesale and retail dealers and shippers of coal.

Continue quotations.

Per ton of 2000 lb.

Lehigh Lump	$15 00	Illinois Smithy	$6 00
Lackawanna	11 00@11 50	" Steam	3 75
Blosburg Smithy	13 00	Connellsville Coke	12 50
Pittsburgh "	10 00	Illinois "	10 00

Buffalo, N. Y.

Sept. 30, 1874.

Reported by our Special Correspondent.

Per ton of 2000 lb.

	Slack.	Nut & Slack.	Nut.	Lump
Connelsville coke				6 50
Sterling cannel				6 00
Red Bank				5 75
Youghiogheny coal for gas				5 50
Briar Hill coal		3 25		5 00
Fairmount "		3 25	3 50	4 25
Catfish "		3 25	3 75	4 50
Stoneboro "	2 75		3 50	

Briar Hill coal, and Stirling and Red Bank cannels, at $8; all other coals $1 per ton above wholesale prices.

Anthracite f. o. b. vessel. Retail prices delivered and screened, $1 per ton additional.

Grate	6 55	Stove	7 00
Egg	6 55	Chestnut	5 60

Chicago, Ill.

Sept. 29, 1874.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.

No change in prices of coal.

The anthracite coal received, since the opening of Lake navigation in May last, to this date, together with about one hundred thousand tons left over from last year, is believed to be sufficient to supply the market until next Spring.

Retail prices per ton of 2000 lb. delivered to buyer.

BITUMINOUS.

Lehigh Lump	$10 75	Briar Hill and Erie	7 50@ ....
Lehigh prepared and car load lots	9 75	Walnut Hill (W. Va.)	5 50@ ....
Lackawanna, Wilkes-Barre and Pittston,*		Midway (West Va.)	6 50@ ....
		Cannel	8 00@ 9 00
Grate, egg, and chestnut.	9 00	Blossburg	8 00
Stove or range	9 50	Indiana Block	6 00
		Hocking "Brooks"	6 00
		Wilmington and Illinois	5 00

*75 cents off these prices for car load lots to country dealers and manufacturers.

Cleveland, O.

Sept. 28, 1874.

Reported by our Special Correspondent.

Quotations remain as follows:

Per ton of 2000 lb.

Youghiogheny, l'p, f.o.b.	$4 65	Straitsville, f.o.b.	$3 40
Youghiogheny, nut	3 60	Columbiana "	3 40
Briar Hill, (Church Hill).	4 25	Strip Vein "	3 65
" " (Brookfield).	4 10	Mountain Blossburg (blacksmith), f.o.b.	5 75
Massilon, according to quality	$3 40 to 3 65	Darlington and Sterling Cannel, f.o.b.	4 50
Hocking Valley, f.o.b.	3 50		
Anthracite, Lackawanna on cars,		Egg	$6 85
" " " "		Stove	7 30
" " " "		Chestnut	6 90
Youghiogheny Coke, " "		here	5 50
Connellsville " " "		"	5 75

Cincinnati, O.

Sept. 29, 1874.

Specially reported by Messrs. A. BUCHANAN & Co., wholesale and retail dealers in coal and coke.

Prices here continue same as last week. Please continue report.

Per ton of 2000 lb.

	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	12 c.	$2 86
Pomeroy coal	9 c.	
Cannel coal	18c.	4 68
Semi Cannel	10 c.	2 60

The following are retail prices delivered:

Youghiogheny	16 c. $3 90@$
Pomeroy	13@14 c. ——
Cannel	24 c. ——
Kanawha Semi Cannel	15c. ——
Anthracite	——
Foundry coke	12c. ——
Soft coke	10c. ——

Council Bluffs, Iowa.

Sept. 29, 1874.

Reported by our Special Correspondent.

Per ton of 2000 lb.

ON TRACK.

Blossburg (blacksmith).	$14 50	Wyoming	14 00
Anthracite	15 00	Missouri	6 00
Iowa	4 50	Kansas	6 00

RETAIL.

Blossburg	$16 00	Wyoming	$12 00
Anthracite	16 00	Missouri	8 00
Iowa	6 50	Kansas	8 00

Detroit, Mich.

Sept. 29, 1874.

Specially reported by Messrs. ROBINSON & KEYS, dealers in all kinds of coal.

Trade has improved slightly over last week's report. Prices remain unchanged and firm, but will probably advance in a few days.

Per ton of 2000 lb.

Lehigh Lump, per ton.	$10 50	Blossburg	8 50
Lehigh " prep. sizes.	9 50	Briar Hill	7 50
Wilkes-Barre, Grate and Egg	8 50	Willow Bank	7 00
		Erie	7 50
Wilkes-Barre, Stove and Nut	9 00	Massilon	7 00

Denver, Col.

RETAIL PRICES.

Per ton of 2000 lb.

Canon	$6 50	Boulder Valley	$4 75
Marshall	5 50	Eulner	5 50
Murphy	5 50	Black Diamond	5 50
Baker	5 00		

Erie, Pa.

Sept. 30, 1874.

Reported by our Special Correspondent.

Wholesale, per ton of 2,000 lb.

Anthracite f.o.b. vessels.

Lump	$6 60	Stove	$6 65
Grate	6 10	Chestnut	6 05
Egg	6 10		

Bituminous f.o.b.

Briar Hill	$4 40	Beaver	$4 25

Retail, per ton of 2,000 lb.

anthracite.

Lehigh, chestnut	$8 50@$9 00
" prepared	8 75@ 9 25
Lykens Valley, stove	9 50@10 00
Lykens Valley, chestnut	8 00@ 8 50
Schuylkill and Wilkesbarre	7 50@ 8 00
Blossburg (Smithing)	7 50@ 8 00

Bituminous.

Chenango Valley (Ormsby), lump	$6 00
Mahoning Valley (Briar Hill), "	5 00
Nut, all kinds	4 00
No. 1 slack	3 00
Bituminous, by car loads to factories	5 35

Indianapolis, Ind.

Sept. 29, 1874.

Specially reported by Messrs. H. McCOY & Co.

Quotations remain as follows:

Per ton of 2000 lb.

BITUMINOUS.

Best Block coal	$2 90	Indiana cannel	6 50
Best Highland	2 40	Hocking Valley	3 00
Block Nut	1 65	Youghiogheny	5 42
Highland "	1 65	Blossburg (smithing)	7 30
Block slack, per car load.	15 00	Piedmont "	7 75
Peytona, cannel per ton	8 50	Gas coke, per bushel.	9½c

ANTHRACITE (Lackawanna).

Grate	$8 70	Chestnut	8 60
Egg	8 70	Stove	8 85

Retail, per bushel of 70 lb.

Block	14c.	Peytonia Cannel	32c.
Highland	12	Indiana "	28
Highland Nut	9	Youghiogheny	25
Block "	9	Blossburg	27
Slack	7	Piedmont	30

ANTHRACITE.

	per ton.		per ton.
Grate	$10 50	Stove	12 50
Egg	10 50	Chestnut	10 50

Louisville, Ky.

Sept. 29, 1874.

Specially reported by Messrs. BYRNE & SPEED.

There is no change in the demand for coal, and prices remain the same as last week.

Pittsburgh, per load of 1900 lb.	$3 75
Pomeroy	3 25
Buckeye Cannel	5 50
Peytona Cannel	6 00
Nut and Slack	2 75
Kentucky lump, per load	3 25
" nut, "	2 75
" Slack "	1 60
City-made Coke, per bushel	10c
Kentucky on cars at wholesale, per bush.	10c
Anthracite, per ton	$10 to $10 50

Milwaukee, Wis.

Sep. 29, 1874

Specially reported by Messrs. R. P. ELMORE & Co.

Trade is active, quotations are unchanged.

Retail prices per ton of 2000 lb.

Lehigh Lump	$10 00	Briar Hill, select	$8 50
Lehigh Prepared	10 50	Blossburgh	8 00
Lackawanna	9 50	Pittsburgh	7 50

Mobile, Ala.

September 26, 1874.

Per ton of 2000 lb.

	On Car or at Yard.	Delivered.
Montevallo, Ala., Slack Coal, (screenings)	$3 00	$4 00
New Castle, Ala., Coal	5 00	6 00
Montevallo Lump Coal, screened	9 00	10 00
Pittsburgh Coal, screened	9 00	10 00
Peach Orchard Coal, Red Ash	10 00	11 00
Virginia Cannel	14 00	15 00
English Cannel	17 00	18 00

The above prices are for car load lots of 10 tons and upward.

New Orleans, La.

Sept. 26, 1874.

Specially reported by Messrs. P. & R. DEVERGES, Wholesale and Retail Dealers in Pittsburgh, Anthracite and Cannel coal.

We have no change to report in our coal market, and would ask you to repeat the quotations of last week. Since our late troubles, of which you are aware, an appalling stagnation pervades every branch of business; some goods change hands, leaving hardly any profit to the seller. The wholesale price of coal to-day is 45 cents, and only a few boats for sale at that price; notwithstanding, the retail price remains unchanged at 60 cents.

Pittsburgh coal, retail, per bbl	60c.
" wholesale	45c.
" to steamboats, per box	60c.
" to manufacturers, per bbl	55c.
Anthracite, retail, per ton	$12 50
" wholesale per ton	$9 50
Spadra (Arkansas) coal, retail, per bbl	75c.
Mt. Carbon, wholesale, per bbl	45c.
" " retail per bbl	65c.
Scotch Cannel, per bbl	1 00

Pittsburgh, Pa.

September 28, 1874.

Reported by our Special Correspondent.

Prices remain unchanged.

Per ton of 2000 lb. and Bushel of 76 lb.

	per ton.		per ton
Youghiogheny coal	$2 15	Pittsburgh retail delivered	
" coke	2 75	per bushel	9c@10c
Connellsville coal	2 25	Anth'cite on cars Lehigh.	$7 75
" coke	3 25	" " Wilkes-Barre	6 75
Pittsburgh coal	2 00		

Twenty-five to fifty cents per ton additional for delivery.

St. Louis, Mo.

Sept. 26, 1874.

Specially Reported by the COLLINSVILLE COAL AND MINING COMPANY.

ANTHRACITE.

Per ton of 2000 lb.

	City delivery.
Lehigh Lump	$13 50
Lackawanna and Wilkesbarre	12 50
Semi Anthracite	9 50

BITUMINOUS.

Per ton of 2000 lb.

	E. St. Louis.	City delivery
Washington Indiana—smithing	$4 00	$4 87
O'Fallon, Ills	2 00	3 00
Collinsville and Belleville, Ills	1 75	2 75
Indiana Cannel	6 00	7 00
Missouri Cannel	....	5 00

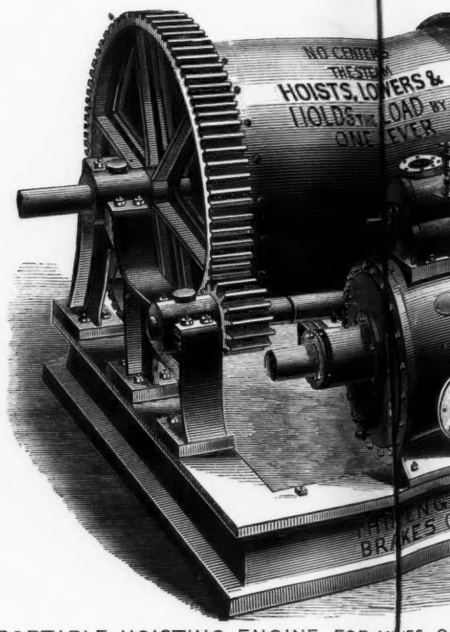
Retail, 25c. per ton additional.

Montreal.

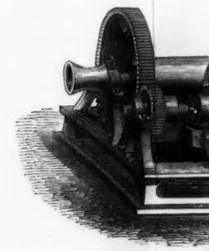
Sept. 29, 1874.

Reported by our Special Correspondent.

Continue quotations.



PORTABLE HOISTING ENGINE, FOR MINES, Q



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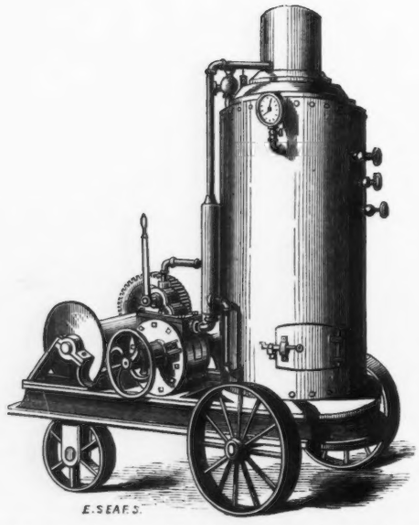
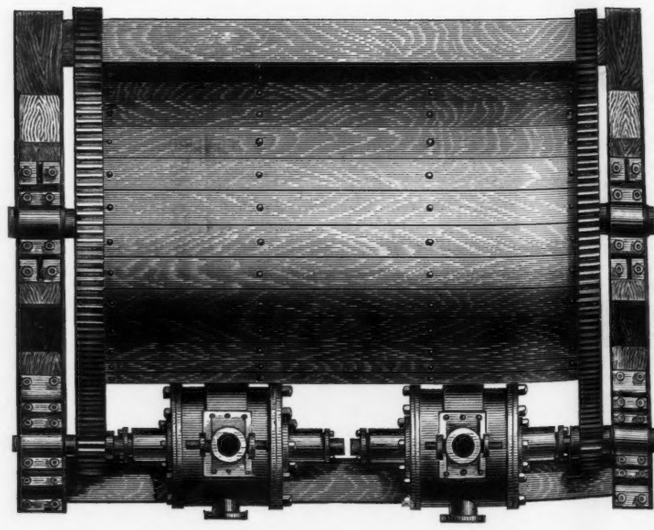
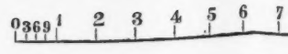


PORTABLE HOISTING ENGINE AND BOILER, Complete





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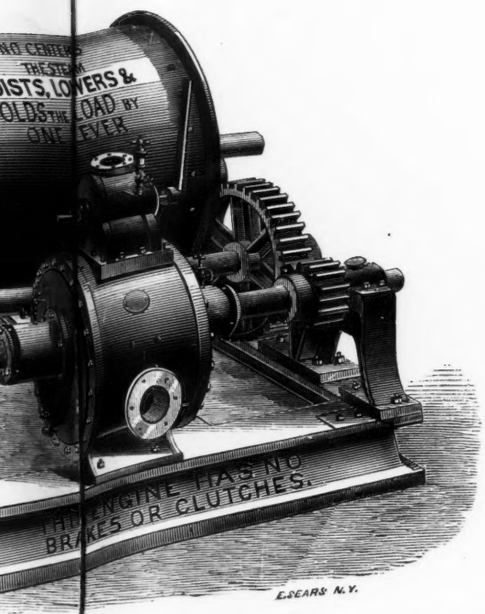
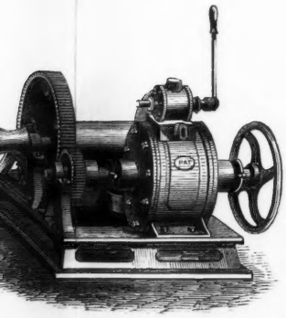
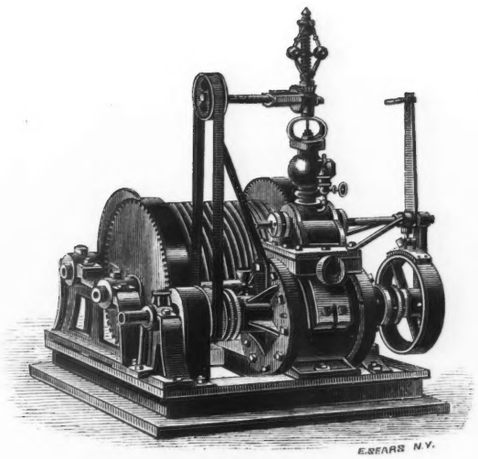


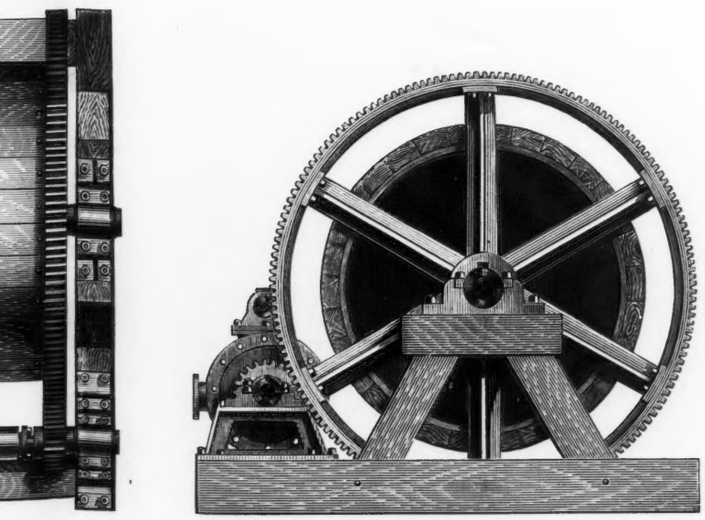
., FOR MINES, QUARRIES AND ALL HEAVY HOISTING.



N HOISTER, WITHOUT BOILER.



ELEVATOR ENGINE.



4 5 6 7 8 9 10 *feet*

OISTING ENGINE, FOR MINES, &c.

ENGINES, 165 Pearl Street, New York.

Per ton of 2,240 lb.

Scotch Steam	$4 50@4 75	Cape Breton Steam	$4 00
Pictou "	4 25	Newcastle Smiths	5 50

Anthracite at retail, 2,000 lb., delivered, less 5 per cent.

Egg	$8 00	Nut	$8 00
Stove	8 50	Chestnut	7 75

Toledo, Ohio.

Sept. 26, 1874.

Per ton of 2000 lb.
Specially reported by Messrs. GOSLINE & BARBOUR.

Retail.		Retail.	
Wilkes-Barre and Scranton,		BITUMINOUS.	
Large and Small Egg,	$8 00	Blossb'g and Cumberl'd,	$8 00
Stove	8 25	Massillon Lump	6 00
Chestnut	8 00	Briar Hill	7 00
Lehigh Lump	10 00	Straitsville	3 75
		Hocking Valley	4 00

Halifax, N. S.

Sept. 28, 1874.

Reported by our Special Correspondent.

Quotations as follows:

Prices per ton of 2240 lb. in gold.

Sydney (old mines)	$4 50	Little Glace Bay	3 50
Gowrie	3 50	Blockhouse	4 00
Victoria	3 75	Albion (at Railroad)	4 25

Toronto, Ont.

Sept. 26, 1874.

Reported by our Special Correspondent.

The prices and terms of the Toronto Coal Exchange remain as follows:

ANTHRACITE.

	per ton.		per ton.
Broken	$7 65	Chestnut	$7 65
Egg	7 65	Lehigh	9 00
Stove	8 15		

BITUMINOUS.

Blossburgh	7 50	Screenings	5 00
Briar Hill	7 00	Soft Nut	5 50

Rates of Transportation on Anthracite Coal to Tide Points.

From Mauch Chunk to New York "towing limits," via Morris Canal $2 65

From Mauch Chunk to Jersey City "for reshipment," via Lehigh Valley R. R. 2 45

* *From Phillipsburg to Hoboken* "for shipment," via Delaware, Lackawanna & Western R. R. 1 34

† *From Penn Haven to Elizabethport, Port Johnston and Hoboken*, via Central railroad of New Jersey 2 35

‡ *From Mauch Chunk to Elizabethport, Port Johnston, Hoboken and South Amboy*, via Lehigh Valley R. R. 2 25

From Port Delaware to New York and Jersey City, via Morris Canal 1 74

From Mauch Chunk to Philadelphia via N. P. R. R. 1 75

From Schuylkill Haven to Philadelphia, via canal. Freight 65c., tolls $1 10 ..... 1 75

From Tamaqua to Port Richmond "for shipment," via P. & R. R. R. 2 07

From Schuylkill Haven to New York, via canal 2 72

From Upper Lehigh to Jersey City, via Central R. R. of N. J. 3 24

From Tamaqua to Philadelphia, via Phil. & Read. R. R. main line 2 17

On canal coal at Jersey City an additional charge of 20 cents per ton will be made for transferring coal from boat to boat, and thirty cents per ton for placing the same on the wharves and re-shipping.

The rate on coal for way-points on the New Jersey railroads will be $1 15 per ton from Mauch Chunk to Phillipsburg.

* 46 cents additional to this rate is added on coal for consumption.

† The rate from Phillipsburg to these points is about $1 per ton less. This rate does not include wharfage or shipping expenses at tide ports.

‡ From Penn Haven to these points it is 16 cents additional, and from Phillipsburg the rate is 91 cents less,

Freights on Bituminous Coals from the Mines to Tide-Water Shipping Ports.

From the Mines to Cumberland and State Line (say an average of 20 miles) the charge is 3 cents per ton of 2240 lb. per mile.

From State Line to Amboy, (346 miles) $4 00 per ton of 2000 lb. On coal shipped beyond that point there is a drawback of 50 cents per net ton.

From Cumberland to Baltimore, (178 miles) $2 58 per ton of 2240 lb., or $2 30 per net ton, and 4 cents per gross ton for use of cars.

From Cumberland to Georgetown, (152 miles) by canal, $1 76 per ton of 2240 lb. *To Alexandria, Va.*, 11 cents per ton more.

From the Mines to Piedmont, (from 4 to 10 miles) 5 cents per ton of 2240 lb. per mile on distances less than 5 miles, and 4 cents per ton per mile on distances not over 10 miles.

From Piedmont to Baltimore, (206 miles) $2 97 per ton of 2240 lb., or $2 65 per net ton.

From any point in the Kanawha Valley to the James River wharves below Richmond (say 350 miles) by C. and O. R. R., including terminal charges, per ton of 2000 lb., for Cannel coal, $5 35. Subject to rebate on large quantities.

Do., do., for Semi Cannel or Splint, $3 65.

From Hawks Nest to Richmond (say 300 miles) the freight on Bituminous or Splint is $3 25 per ton of 2000 lb; on Cannelite it is $5 00.

From Irwin to W. Phila. (say 332 miles) per P. R. R. Penn. Westmoreland gas coal, per ton of 2000 lb $5 00

From Osceola to W. Phila. (say 248 miles) per T. & C. R.R. per ton bituminous coal of 2000 lb 3 55

From Fairmount and Clarksburg to Baltimore (say 300 miles) via B. & O. R. R. including loading, per 2000 lb 5 20

On through coal after deducting drawback 4 15

From Richmond, Va., to New York, 392 miles per 2000 lb. 2 10

" " " Boston about 650 " " 3 00

" " " Philadelphia 292 miles " 1 75

From the Mines to Richmond via James River and Kanawha Canal, 15 miles 52

Freights.

Our quotations of river and sound freights remain almost as reported in our last with a somewhat firmer feeling. We quote Boston rates nominally $1 25, Providence $1. 900. has been accepted to this point, which is an exception to the prevailing rates. The rate from Philadelphia to Boston remains at $1 50. We hear, however, of higher rates being offered and paid. Vessels from this point are scarce, light draft ones especially so.

A 250 ton vessel has been chartered from Georgetown to New Haven at $1 75. A vessel of 850 tons has been taken from the same point to Somerset at $1 30.

OFFICE OF THE PA. AND N. Y. RR. Co.,
Bethlehem, October 1st, 1874.

On and after this date, rate on Coal to Buffalo, Rochester and points west of Salamanca on Atlantic and Great Western, or Erie Railways; Watkins, for shipment, on Northern Central Railway; Ithaca, for shipment, on Ithaca and Athens RR.; Auburn, for New York Central RR.; Weedsport, for Erie Canal; Sterling, for Lake Ontario Shore RR.; and Fair Haven, on Southern Central RR.; will be advanced on this Road 3 cents per ton.

OFFICE OF THE LEHIGH VALLEY RR. COMPANY,
Mauch Chunk, Pa., Sept. 18, 1874.

On and after October 1st, H. B. BERRYHILL, Esq., will take charge of the Scales of this Company. F. B. MORRIS, Esq., will succeed Mr. BERRYHILL as Agent at Packerton Forwarding Office, from the above date. Communications should be addressed accordingly.

REVIEW OF THE BRITISH COAL AND IRON TRADES.

Compiled from our Exchanges bearing date to Sept. 19, 1874.

London.—A decided improvement has manifested itself in the British iron trade during the week under review. The continued extensive purchases of rails and railway material by Russia and India, and the probable settlement of the difficulties existing in the North of England (the men having agreed to resume work at the old rates pending the decision of a board of arbitration), also the general desire of all the important districts affected with lock-outs to come to a settlement, have given a greater impetus to the trade than has been noticeable for a long time past. The market for Glasgow pig has been very active, quotations ranging from 81/ to 83/ 6d. Household coal has been very dull, the price having receded 2/ per ton, original Hartlepool selling at 25/. The tendency of manufacturing coals is also downward, there being large quantities of the same in stock.

Cleveland.—There was a good attendance on 'Change at Middlesborough, on Tuesday, and an average amount of business was done. On account of the great probability that the threatened strike of the Durham miners will be adjusted, prices were easier than last week. No. 3 may be quoted at 66/; No. 4 forge, from 57/ to 59/. The coal and coke trade much easier. Good household coal can be bought for 16/ per ton, and coke has dropped to 14/.

South Staffordshire.—At a recent meeting of the South Staffordshire coal masters the price of best coal was reduced 3/ per ton, or from 16/ to 13/. At the same time it was resolved to reduce the wages of the Thick-coal miners 6d. per day, and of the Thin-coal men 3d. per day. If coal should go down to 11/ per ton, then colliers wages are to be reduced to 3/ 6d., and ironstone getters to 3/ per day. This arrangement is in accordance with an agreement entered into between the colliers' delegates and coal masters at a meeting held in Birmingham in July last. We have known Thick-coal colliers' wages as low as 3/ for a day of eleven hours, and Thin-mine workmen's 2/ 3d. per day. This action of the coal masters has given an improved tone to business, and contracts for coal are being entered into with a freedom which has not been conspicuous for a long time past. The pig iron trade also partakes of an improved feeling. At a recent meeting of the pig iron masters it was decided to reduce the wages of the men 10 per cent. The quotations of cinder pig ranges from £3 2/ 6d. to £3 7/ 6d. Ordinary sheets are held at £13 5/.

North Staffordshire.—An improvement is noticed in the iron trade of this district, with an upward tendency of quotations. Good gray forge pig iron has been selling at 70/ at the furnaces, a price which leaves but a small margin, if any, for profit. House coal is devoid of interest. We quote, nominally, 16/ per ton.

Lancashire.—First and second qualities of house coal are in good demand, the pit quotations for best coal is from 12/ to 12/ 6d., furnace 10/ to 10/ 3d., but sales have been made at prices less than these. Good Arley mine coal is quoted at 14/ per ton at the pit, with a good demand. For forge and foundry pig iron a tolerably good demand is maintained. Sales of the latter have been very considerable, both for immediate and forward delivery. No. 3 foundry iron delivered at Manchester is quoted at from 75/ to 77/ 6d. per ton. Prices of forge iron range from 67/ 6d. to 72/ 6d. per ton.

Newcastle-on-Tyne.—The demand for steam and house coal continues very good, the price for the latter at the pit ranges from 14/ to 16/ per ton, coke is 16/ to 18/ per ton, pig iron is firm, forge selling at 57/ to 58/ per ton at the works, No. 3 sells at 68/ per ton.

Cardiff.—An improvement is noticed in the iron trade of this district. The quotations for heavy sections remain steady at from £7 10/ to £7 15/. First class qualities of steam coal are firm at 18@19/. House coal is also steady at unchanged quotations.

Glasgow.—The warrant market remains steady, and there is but little change in the position and prospects of the trade since last week. In the face of the small stock, sellers still persist in "bearing," which enables the holders, by buying a few thousand tons, and demanding the warrants, to raise the price several shillings per ton. The general expectation is that eventually the increased production will tell on the stocks, and that prices will fall considerably. Gartsherrie No. 1 is quoted at 107/ 6d.; No. 3, 84/. The reduction in some of the principal makers' brands has been from 3/ to 5/ from our last quotations. The stock of pig in store in Glasgow amounts to 19,000 tons. Coals are still quiet, and prices incline in favor of buyers. Best splint coals have been reduced 1/ per ton, and some qualities of coke 5/ per ton, and are now quoted at 9/ and 25/ per ton respectively.

IRON MARKET REVIEW.

New York.

Oct. 2, 1874.

September, it was hoped, would bring some of the long expected relief to the iron trade, but this has not been the case, and, consequently, the depression has increased. At no time during the year has this market been so dull and dealers so despondent as during the week under review. No. 1 Lehigh irons, held firm at $32 two months ago, and at $30 last week, are now quoted at $29, and very fair brands have been offered at $28, and No. 2 at $26. The fact is no one wants iron, and few are sanguine enough to buy for speculation on a falling market. There is a general impression that pig iron will still further recede, for if no better business is done during this month (which should be our most active season), than now appears probable, those having stocks will have to carry them over to spring, and some of the furnaces can ill afford to do that.

Our advices from other parts of the country are more encouraging than those of New York, and though there is nowhere any expectation of an advance or any very brisk business, an even, regular trade for immediate consumption is springing up as the old stocks are being worked off. We do not expect higher prices for months to come, but since it is the consumptive demand that is wanting, nothing but time can bring that up, and even if iron was to-day offered at $5 per ton less than it is, no great amount could be placed.

The Thomas Iron Company, whose safe and wise policy has been to carry no stocks, and which to-day has not probably 500 tons of any one number in its yards, has orders ahead for a considerable amount, and has now five out of eight furnaces blowing. This company has recently reduced wages, the rates now paid being $1 65 for keepers and fillers, $1 25 for common laborers.

Common labor about the mines will average in Pennsylvania $1 per day, and $1 20 in New Jersey. In Alabama, ordinary labor at the works cost 90 cents, and fillers $1 25.

These rates are so low, that there is no possibility of reducing them; but economy may be obtained by economizing in the quantity of labor expended on the ton of iron.

The *American Manufacturer's* reports give the following as the statement of furnaces in and out of blast on the 1st of September:

	In blast.	Out of blast.
Charcoal	143	63
Coke	83	98
Anthracite	122	65

"Or, in general terms, about three-fourths of the charcoal furnaces are in blast, one-half of the coke, and two-thirds of the anthracite.

"As to stocks, our information is not as definite as we could wish. Charcoal and anthracite irons are very large and increasing. While the stocks of coke irons are considerable, there is no great increase, as consumption about equals production. Our reports lead us to this conclusion, that there is little prospect for better times in pig iron until about half of those furnaces that are now in blow out and stay out for at least six months."

American Pig.—We have to report sales of about 1,000 tons of Thomas iron during the week at average quotations, and 400 tons mottled at private terms, which, of course, means "low." We quote :—No. 1, $28 to $29; No. 2, $26 to $27; forge, $25 to $26.

Scotch Pig.—There is scarcely any Scotch iron in this market, and prices are consequently firm at $38 for Eglinton; $40@41 Glengarnock. Cable telegrams informs us that prices on the other side have been advanced and are held firm at 117/ 6d. for Coltness and Gartsherrie, 94/ for Eglinton, 104/ for Glengarnock. Our mail advices to the 18th state that the stocks in store at Glasgow at that date were 18,709 tons against 41,211 at the same date last year. The number of furnaces in blast were 112, and out of blast 44. Glasgow warrants 85/.

Rails.—The feature of most interest during the week has been the discussion of a sale of 10,000 tons to the Central Pacific Railroad. Of these, 3,000 tons were steel from Cambria works at a low figure, 4,000 tons Scranton iron rails, reported by us last week, and 3,000 tons Allentown iron rails, at very low prices in each case. We continue to quote American steel $80 at the works, iron $55 at the works, and even these prices are shaded. Foreign is nominally $48@50, gold.

Old Rails.—We note the sale of 1,000 tons, at $31 50, six months. We quote $30@31.

Scrap.—There have been no sales of note to record. Some of the railroads are offering old car wheels, we understand, at $25. We quote wrought nominally $30@33.

We give Messrs. BIGELOW & JOHNSTON'S Monthly Prices Current for September.

NEW RAILS.

IRON.—Foreign, $48@50, gold; American, $55@60, currency; impor at New York this month, none; previously since Janu-

ary 1, none; Total to date, none; same time, 1873, 41,449 tons.

There is a general complaint of lack of good business, and although enquiries are more numerous, yet the anticipations of activity so prevalent some time ago have not yet been realised. In Foreign there has been only a trifling amount of business during the month, but in American some considerable sales are reported, and the immediate outlook is rather brighter. Prices are probably at their lowest, though the idea is becoming prevalent that we must wait till Spring for the long hoped-for revival. In Steel there have been considerable sales at fair prices. This article can now be purchased at so moderate a figure that we think the demand must be greatly stimulated and increased henceforward.

STEEL.—Foreign, nominal; American*, $80@95, currency; import at New York this month, 6,651 tons; previously since January 1, 58,407 tons; total to date, 65,058 tons; same time, 1873, 72,663 tons.

OLD RAILS.

Double Heads, nominal; T or Flange, $31@32, currency; U or Bridge, nominal; import at New York this month, none; previously since January 1, 2,235 tons; total to date, 2,235 tons; same time 1873, 9,312 tons.

Several thousand tons have been sold during the month, chiefly, however, of T Rails from home roads at low figures. The demand is not great, and there is still an excess of supply. Double Heads are offered at £4 7/. 6. f. o. b. London.

SCRAP IRON.

No. 1 Wrought, $33@35, currency. Dull and depressed.

PIG IRON.

American Forge, $25@26, currency; No. 1 Foundry, $29@30, currency; No. 2 Foundry, $27@28, currency; Scotch No. 1 Foundry, $35@42, currency; import of Foreign this month, 700 tons; previously since January 1, 23,603 tons; total to date, 24,303 tons; same time 1873, 51,471 tons.

In American, trade continues to languish, and with accumulating stocks prices tend downwards. Scotch is firm, and the stock is now at so low a point that the merest retail trade is only possible. Prices of No. 1 at Glasgow have advanced 7/ to 10/ per ton during the month, with considerable demand.

* These prices represent as nearly as possible the range, according to location of mills.

Boston.

From the *Commercial Bulletin* of September 26.

Pig is lifeless; not a ripple of business has been visible. The teamsters of Oliver, Broad, Custom House, and Commercial streets report an absolute absence of orders all the week. There have been a few foundry men in from the nearby localities, but they refuse to listen to any offers or suggestions of bargains. As an instance we note that a lot of 1500 tons now on wharf was offered four weeks ago at $27, and $25 was bid, and now this week it sought a buyer from Bridgewater at $24, and was refused. This arises not out of the inferiority of the goods, but from want of confidence in the market, and the unusual absence of orders.

Bar is flat. The week past has been unmistakably quiet, and while dealers have been canvassing for orders at less than 3 cents on picayune lots, their luck has been small indeed. We note one fact in illustration of the anxiety of the market. An outfit of extra heavy axles for six wagons has been placed at under 8 cents against the quoted bottom price of 11 cents. The trade are busy with the discussions of very many just such transactions, and yet some ask us to "quote a buoyant feeling."

Steel is dull. A large Worcester machinist tells us he was offered one of the best brands Pittsburgh machinery steel at 9¾ cents against 11 cents, his best opportunity previously, and yet he did not purchase, since his shop, as also his neighbor's, was at a stand.

We quote yard lots of American pig iron at $36@$39 per ton, including No. 2 extra at $34@$36, and No. 1 at $38. We quote Eglinton at $38, Coltness Gartsherrie at $45@$46, Charcoal at $45@$55.

Chicago

Sept. 29, 1874.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron.

Quotations remain as follows:

No. 1 Coltness	$46 00@ ....
No. 1 Gartsherrie	45 00@ ....
No. 1 Summerlee	44 00@ ....
No. 1 Glengarnock	42 00@ ....
No. 1 Eglinton	40 00@ ....
Warner's "American Scotch"	41 00@ ....
Massilon No. 1 Foundry	37 00@ ....
No. 1 Grand Tower Mo. ores (Bituminous)	35 00@ ....
No. 2, " " "	32 00@ ....
No. 1 Mill	31 00@ ....
Union "A" 1 (Anthracite)	34 00@ ....
Union "B" 1 (Anthracite)	32 00@ ....
No. 1 Lake Superior (charcoal)	36 00@ ....
No. 2 Lake Superior "	34 00@ ....
No. 3 Lake Superior "	36 00@ ....
No. 4 Lake Superior "	42 00@ ....
Bessemer Steel Rails	90 00@95 00
New Iron Rails	55 00@ ....
Old Rails	28 00@ ....

Cleveland.

Sept. 29, 1874.

Specially reported by Messrs. C. E. BINGHAM & Co., dealers in pig iron and iron ore

Market firm, at prices below, on 4 months time. Discount for cash, 3 per cent.

No. 1, Anthracite Foundry	$.... @....
No. "	.... @....
No. 1, Bituminous "	31 00@....
No. 2, " "	29 00@....
No. 1, Gray Forge	27 00@....
No. 1, Massilon Black Band	36 00@....
No. B-1 " "	34 00@....
No. 2 " "	32 00@....
No. 1, Lake Superior Charcoal	33 50@....
No. 2, " "	32 50@....
No. 3, " "	34 50@....
No 4, " "	37 00@....
Nos. 5 and 6 " "	38 00@....
American Scotch, No. 1, Cherry Valley	35 00@....
" " No. 2	32 00@....

Cincinnati.

Sept. 29, 1874.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

The week opens with a little more inquiry for both foundry and forge iron, and as holders seem to be anxious to meet the views of consumers, a slight deline in prices has been the consequence. Transactions, however, are still confined to small lots for immediate use. We quote:

CHARCOAL.

Hanging Rock, No. 1, Foundry	$33 00@ ....—4 mos
" No. 2, "	30 00@31 00—4 mos
Mill	27 00@29 00—4 mos
Tennessee No 1, Foundry	30 00@31 00—4 mos
Tennessee. No. 2 "	29 00@30 00—4 mos
" Mill	27 00@28 00—4 mos
Missouri, No. 1, Foundry	34 00@35 00—4 mos

STONE COAL.

Ohio No. 1, Foundry	30 00@31 00—4 mos
" No. 2, "	28 00@29 00—4 mos
Ohio Mill	27 00@ ....—4 mos
Missouri, No. 1, Foundry	31 00@32 00—4 mos
" No. 2, "	29 00@30 00—4 mos
" Mill	27 00@28 00—4 mos

CAR-WHEEL.

Hanging Rock, C. B	50 00@55 00—4 mos
Tennessee "	45 00@48 00—4 mos
Missouri "	45 00@48 00—4 mos
Alabama "	45 00@48 00—4 mos

BLOOMS.

Charcoal	80 00@ 90 00—cash

SCRAP IRON.

Cast	80@ 90—cash
Wrought	1 25@ 1 50—cash

Indianapolis, Ind.

Sept. 28, 1874.

Specially reported by NELSON KINGMAN, broker and dealer in pig iron, etc.

Present quotations are as follows:

New Rails at mill	$62 00@64 00
Old Rails "	30 00@31 00
Hanging Rock Charcoal Pig No. 1 foundry	35 00@36 00—4 mos
" " " " " 2 "	32 00@33 00—4 mos
" " " Mill	29 00@31 00—4 mos

STONE COAL.

Indiana No. 1 Foundry pig Planet furn'e.	32 00@34 00—4 mos
" 2 " " "	31 00@32 00—4 mos
" 1 Forge " "	29 00@ ....—4 mos
" 2 " " "	27 00@ ....—4 mos
Ohio No. 1 Foundry pig	33 00@34 00—4 mos
" 2 "	31 00@32 00—4 mos
" 1 mill	28 00@30 00—4 mos
Merchant Bar, card rates	60 00@62 00—3 mos
1st quality C. H. No. 1 Boiler Plates, per lb	5¾@6 c.—3 mos
1st " Com Sheet, for No. 24, W.G. "	5 c.—3 mos
1st " Charcoal Sheet " " "	6 c.—3 mos
Best Bloom Galvanized Sheet, discount 20 per cent	—cash.
2d quality " " " 30 "	—cash.

f. o. b. in Indianapolis.

Louisville.

Sept. 29, 1874.

Specially reported by GEORGE H. HULL, Esq.

The market is dull and lower for nearly all grades of iron.

Quotations are revised as below. The usual time, 4 months, is allowed on the quotations below.

HOT BLAST—CHARCOAL.

No. 1 foundry, from Hanging Rock ores	$30 00@33 00
No. 2 " " "	28 00@29 00
No. 1, forge, " "	26 00@27 00
No. 1, foundry, " Tennessee "	28 00@30 00
No. 2 " " "	27 00@28 00
No. 1, forge, " "	26 00@27 00
No. 1, foundry, " Alabama "	28 00@30 00
No. 1 " " Iron Mountain "	32 00@34 00

HOT BLAST—STONECOAL.

No. 1, foundry, from Missouri ores	30 00@33 00
No. 2, " " "	28 00@29 00
No. 1, forge " "	28 00@30 00

COLD BLAST—CHARCOAL.

Car Wheel from Hanging Rock ores	50 00@54 00
" " Tennessee "	45 00@46 00
" " Alabama "	48 00@50 00
" " Georgia "	48 00@50 00
" " Missouri "	45 00@46 00
" " Kentucky "	45 00@50 00

Milwaukee, Wis.

Sept. 28, 1874.

Specially reported by Messrs. R. P. ELMORE & Co.

Our markets in coal and iron remain without particular change either in price or sales. The iron trade is more healthy if any thing.

Per ton of 2,240 lb.

Scotch ranges	$40 00 to $45 00
No. 1, Lake Superior Charcoal	36 00 to 38 00
" 2, " " "	34 00 to 36 00
" 1, " " Anthracite	35 00 to 36 00
" 2, " " "	33 00

Pittsburgh, Pa.

September 29, 1874.

Specially reported by A. H. CHILDS, Esq., commission merchant for the sale of pig iron, blooms, ore, &c.:

The metal market continues in the same inactive condition as reported for some time past, and the outlook is not very encouraging for any speedy improvement. Prices are unchanged

From the *American Manufacturer*.

PIG IRON.

WEDNESDAY, September 30, 1874. The market remains in substantially the same condition noted at the date of our last review; the demand is still restricted entirely to supplying immediate wants, as consumers are still adhering closely to the policy of carrying just as little stock as they possibly can; while, as regards prices, there has been no quotable change. Producers generally are confident that the lowest notch has been reached, and consumers, as a rule, do not expect prices to go much, if any, lower, although, as a general thing, they are refusing to buy except to meet immediate requirements. Good standard forge irons are quotable at $26 50, 4 mos., and $26 cash. Foundry irons continue very dull, and we hear of sales of No. 1 as low as $28. The most encouraging feature to record as regards the producing interest is that the production in the west has been very considerably curtailed, although there is no disguising the fact that stocks are still considerably in excess of the demand, also that as long as this continues there is not much chance for an improvement in prices.

No. 1 Foundry, anthracite or bituminous	$28 00@29 00—4 mos
No. 2, " "	27 00@28 00—4 mos
Gray forge " "	26 00@26 50—4 mos
White and mottled " "	24 00@25 00—4 mos
Hot blast charcoal	35 00@38 00—4 mos
Cold " "	45 00@50 00—4 mos

MANUFACTURED IRON.

The general position of the market for finished irons remains substantially as noted in our last review. While business is not by any means all that could be desired; while orders are not coming in as freely as they did prior to the recent advance, nor was it expected, the mills are nearly all in operation, some of them running to their full capacity; and furthermore, prices are fully sustained. So far as we have been able to learn, there has been no disposition manifested to cut, and there is not much doubt but that the mills will have all they can do during the balance of the year. We continue to quote on a basis of a three-cent card, which brings the selling price down to two cents and eight-tenths. There is no accumulation of stock, as the mills are working on orders, and as already intimated there is not much doubt but that they will continue to have about all they can do during the balance of the year.

Sales for the week ending September 30, 1874:

BITUMINOUS COAL SMELTED FROM L. S. ORE.

20 tons No. 1 foundry	$28 00—4 mos
50 " No. 2 foundry	27 00—4 mos
20 " gray forge, open	27 00—4 mos
290 " gray forge	26 50—4 mos
50 " gray forge, medium	26 00—4 mos
100 " gray forge, close	26 00—4 mos
100 " "	25 00—4 mos
150 " white and mottled	24 00—4 mos
100 " " "	P. T.

COKE.

10 tons No. 1 foundry, Connellsville	$29 00—4 mos
10 " No. 2 foundry, Connellsville	27 50—4 mos
200 " gray forge, Allegheny, C. S.	28 00—4 mos
100 " gray forge, Connellsville	26 50—4 mos
150 " gray forge, Connellsville	25 50—cash.
130 " white and mottled, mixed	24 00—cash.

NOTE.—In our reports very little of the iron made in the city is included, as in most instances the parties owning the furnaces use the iron in their mills. This will add from 3000 to 3500 tons per week to our report.

Philadelphia, Pa.

Sept. 30, 1874.

No improvement has manifested itself in the iron trade here during the week. The sales of pig metal for immediate necessities have been considerable, but it is generally understood that they were made at a loss, indeed almost any offer is accepted which is the means of converting stocks into cash. It was hoped that the recent revival of operations among a few of the prominent mills would impart some animation to the trade, but it is not probable that there will be any improvement until Spring, unless the furnace proprietors should suspend operations altogether. No. 1 foundry is nominal at $30; No. 2, $26 to $27; gray forge, $24 to $26. Sales of cold blast carwheel have been made at $40 and of hot blast at $36 to $37. Old rails can be bought for $29 to $31, and scrap for $30 per ton. The principal dealings during the week have been for pipe works, their purchases during the month amounting to from 12 to 15,000 tons.

There was a meeting of pipe manufacturers here last week, to canvass the situation, present as well as prospective, and, as we are informed, it was largely attended. It was agreed to reduce the discount 50 per cent., that is for round lots, off the regular list; and it was resolved to stand by the rate agreed upon. We understand that there has been considerable "cutting" of late, and it is hoped and expected now that manufacturers will adhere to the rates just established. Business continues fairly active; the mills here, we learn, have about all they can do.

METALS.

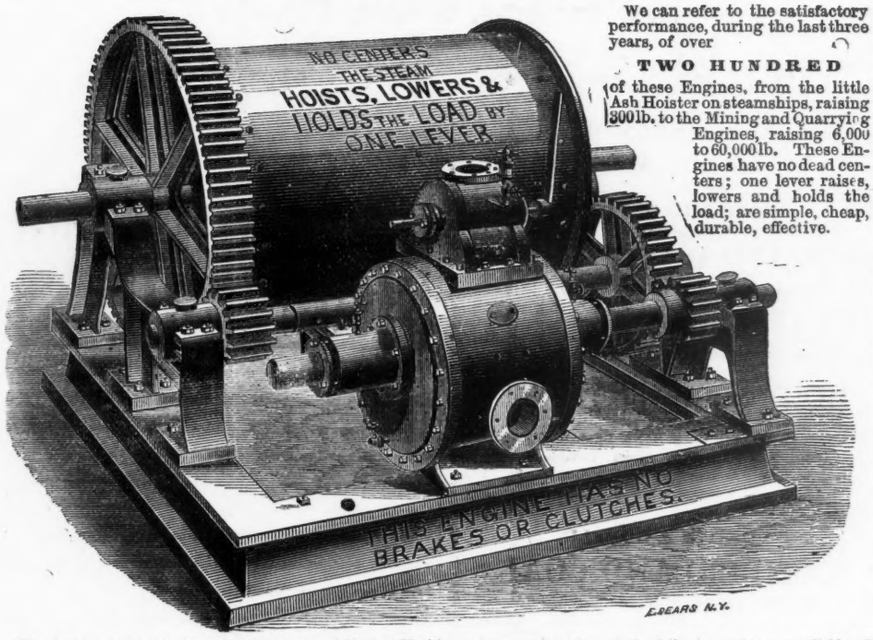
NEW YORK, Oct. 2, 1874.

Gold Coin.—During the week past, gold has ranged from 109¼ to 110¼, and closed yesterday at 110¼.

Bullion.—Fine silver bar is quoted at $1 25⅛@$1 26¼, gold, per ounce, and fine gold bar at par ($20 67, gold, per ounce.)

Copper.—The transactions have been moderate, mostly at 21¾ for spot, and 21⅛@21¾ for future. The market is very firm and advancing. We quote Lake at 21½ for large orders, 21¾@22 retail. Baltimore the same. The Lake Copper is nearly all held by the Combination, of which the Calumet and Hecla Cos. are the head, and prices will probably advance still further. The European advices by telegraph quote Chili bars at £81 10/, the market being firm and advancing.

ROTARY REVERSIBLE HOISTING ENGINES.



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165 Pearl Street, New York.

SEND FOR CIRCULAR.

Our mail advices to the 18th of September quote Chili Slab at £79@81 for best brands, at Liverpool or Swansea, and best selected Ingot, £86@88. Messrs. VIVIAN, YOUNGER & BOND say:

"There has been a very steady business in all descriptions during the week, Chili Bars selling at £78 to £78 15/ for ordinary, and £78 10/ to £79 10/ for picked and special brands, and the market closes with rather a hardening tendency, and buyers at £78 10/, sellers asking 10/ to 20/ advance.

"Two cargoes Chilian Regulus sold at 15/ 9d. per unit, spot and to arrive.

"In Australian, rather less doing at £89 for Wallaroo; Burra scarce at £87 to £87 10/; Ingot, various selling at £84 to £86, according to brand.

"Manufactured in moderate request at £92 to £93 for strong Sheets. Yellow Metal Sheets and Sheathing, 7¾d. to 8d.

For prompt delivery, Tough Cake is in good demand, up to £86 being paid; Best Selected, as a rule, commanding only £1 more, or half the usual difference."

Lead.—Lead is firmer, and though sales have not been l rge, the tone of the market is healthy. Government still at 6c.; Domestic has been sold 6.10; 100 tons of West-Lead has arrived.

Our London advices say Lead has an upward tendency at £21 10/ to £21 12/ 6d. for good shipping brands of English.

Spelter and Zinc.—There have been few transactions during the week, and prices may be quoted 6¼c.@6¾c. for Foreign; Domestic, 6¾c. currency. The stock of Foreign here is about 250 tons. We note sale of 20 tons Western at 6¾c.

Sheet Zinc is held firmer, the foreign advices indicating a rise on that side. We quote 8¾c.@9¼c. for Silesian and Moselman.

From London we learn that prices for special brands of Foreign are again dearer, up to £22 15/ for CGH, and PH. English £23 to £23 10/.

Antimony—Is in limited supply, and is held firmer at 11¾@11¾c., gold.

Tin.—There is a very limited demand, but holders are firm in their prices. English Refined is quoted at 21@21¼c.; L. and F. 21¼@21½.; Straits, 22c., all gold. London quotations by Cable give Common £97, English Refined £98.

Latest Singapore advices give Malacca Tin $24 75 per picul. September shipments to New York and Boston, 150 tons. Messrs. JAMES & SHAKESPEAR, of London, quote:

"Makers of English have raised their quotations 2/ per cwt., a good demand having set in for their production, owing to the rise in values of Foreign, but at the present rates the enquiry is scarcely so active.

Both Australian and Straits sold freely in the early part, the former at 91/ to 92/ cash, the latter at 93/ 6d. and 94/, same terms, and 92s 6d. for arrival; the extreme quotations are now barely maintained, though no anxiety is exhibited to sell at a reduction therefrom

The ticketing for on 15th ult. consisted of ly ¾ ton of Australian, which fetched 49/ 3d. per cwt. For the sale on 6th promimo 70½ tons of Australian have been declared.

Tin Plates.—The market is moderately active, and prices are steady, with sales of about 1500 to 2000 boxes at following prices: I. C. Charcoal, $9 75@10 gold, per box; I. C. Coke, $7 75@8; Charcoal Terne, $8 75@9; Coke Terne, $6 75@7.

Manganese.—Quotations are unchanged. New Brunswick Manganite is offered for export to Europe; from Georgia, likewise, a better quality of 80 per cent. is in market. Real Pyrolusite, in crystals, 7c.; imported from Saxony, 8c.; Virginia hard Psilomelane, 3c.; Georgia mixed, $40 per ton; New Brunswick, 65 and 75 per cent., 3½c. per lb.

Quicksilver.—The price at San Francisco is quoted at $1 45. In London, it is quoted nominally £23 per flask (75 lb.) The New York market is a very limited one, and it may be quoted at $1 60@1 65.

Miscellaneous Stocks.

NEW YORK, Oct. 2, 1874.

The dealings in the following list during the past week do not exhibit any falling off as compared with the activity reported in our last. The stocks dealt in at the Philadelphia Board have slightly declined, the market yesterday closing steady; the New York list, on the contrary, exhibits an advance in all of the items, probably in sympathy with the buoyant feeling pervading the general market here.

	Bid.	Asked.
*New Jersey Central R. R. Co	—	106¼
American Coal Co	—	61
Maryland Coal Co	20	—
Pennsylvania Coal Co	—	245
Quicksilver Mining Co	33½	34
Reading R. R. Co	55¾	55½
Delaware and Hudson Canal Co	115¾	—
Lehigh Coal and Navigation Co	47	47¼
Lehigh Valley R. R. Co	60½	60¾
Catawissa Preferred	42¾	43¼
*Delaware, Lackawanna & West. R.R.Co.	107¾	108
Consolidated Coal Co	47	47¾
Little Schuylkill R. R.	47	48
Huntington & Broad Top R. R. prefrd.	12½	13½
St. Louis & Iron Mountain	—	16
Morris Canal Preferred	120	124
Susquehanna Canal	6	10

* Ex-dividend.

San Francisco Stock Market.

BY TELEGRAPH.

NEW YORK, October 1, 1874.

The transactions in the San Francisco Stock Board during the past week partake of a greater degree of activity and buoyancy than we have recorded for a long time. Without exception the list has advanced. Chollar is $20 higher than last week, Savage $17 higher, while Yellow Jacket still continues its remarkable upward movement, our quotations today placing it at $121 per share, an advance of $14 as compared with our last. The Savage Mining Company announces an assessment of $10 per share delinquent October 5. An assessment of $2 per share has also been levied by the Gould and Curry Mining Company delinquent the 6th inst. The report is as follows:

Savage	81	Imperial	11
Crown Point	62½	Raymond & Ely	17
Yellow Jacket	121	Meadow Valley	6¾
Kentuck	26	Eureka G. V. Bid	8
Chollar Potosi	84	Ophir	—
Gould & Curry	28¼	Hale & Norcross	—
Belcher	69¼	Consolidated Virginia	93¼

Boston Stock Market.

BOSTON, October 1, 1874.

The following quotations of Copper Stocks evince but few changes as compared with our last. Calumet and Hecla and Quincy have advanced. Copper Falls shows a slight decline. The market is inactive Calumet and Hecla and Quincy being the only items dealt in during the last few days.

Allouez	7	Pewabic	—
Calumet and Hecla Co.	130	Phœnix	14
Copper Falls	10¾	Quincy	33
Central	—	Ridge	5
Franklin	—	Rockland	—

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. The ENGINEERING AND MINING JOURNAL, which is the Organ of the Institute, and contains its proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. The Council earnestly requests members to forward to the Secretary, for preservation, copies of all printed mining and geological reports, particularly pamphlets, which may fall in their way. It is believed that by this means a large amount of valuable fugitive information concerning different regions and properties in this country, may be caught and preserved.

THOMAS M. DROWN, Secretary, Lafayette College, Easton, Pa.

MISCELLANEOUS.

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Analysis of Average New Bed Pure Ore.

Metallic iron	68. 24
Oxygen with the iron	26. 01
Water	.38
Insoluble Siliceous matter	4. 32
Sulphur	practically none.
Phosphorus	.038
Alumina	.28
Lime	.14
Undetermined matter and loss	.592
	100.000

Analysis of No. 1 Bessemer Pig.

Undetermined matter and loss	.134
Silicon	1.019
Carbon	3.821
Phosphorus	.048
Sulphur	practically none.
Calcium	.140
Metallic iron	94.838
	100.000

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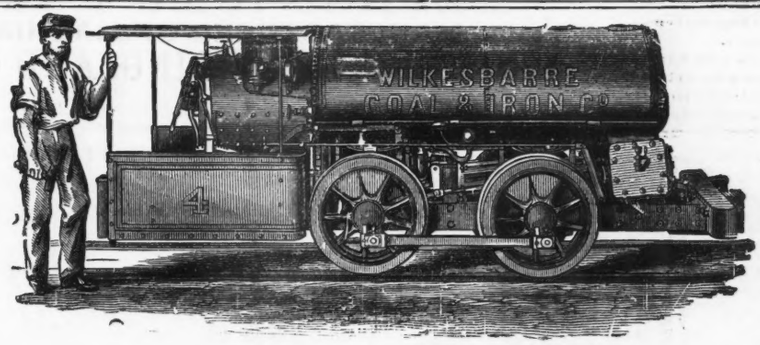

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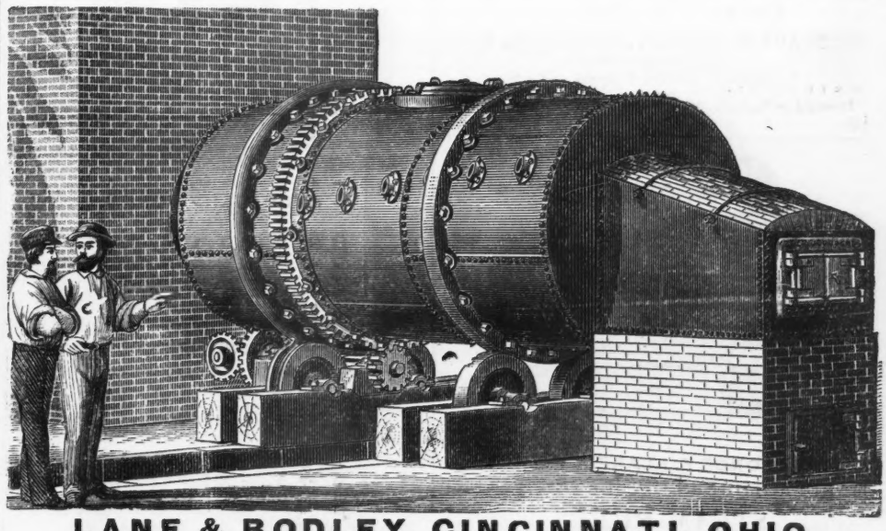

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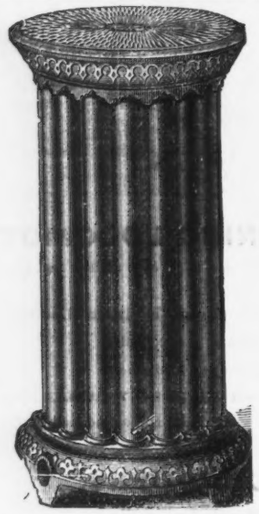

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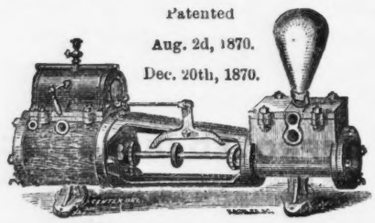

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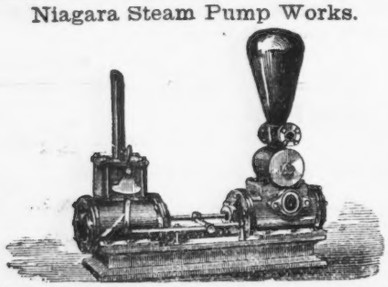

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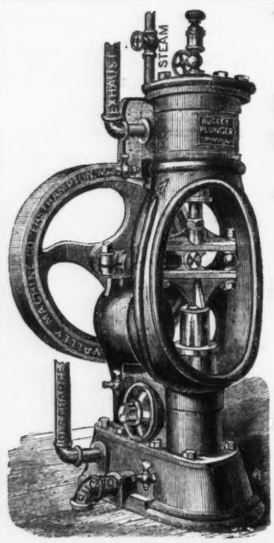

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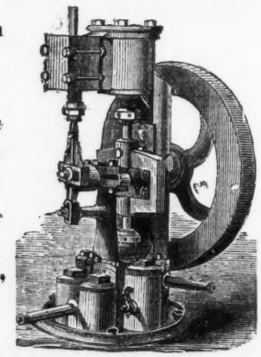

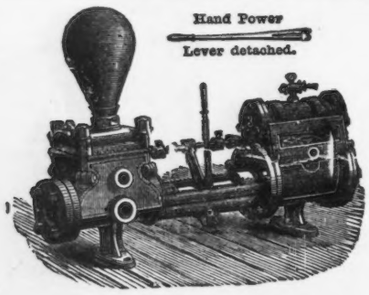

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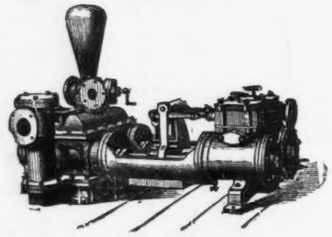

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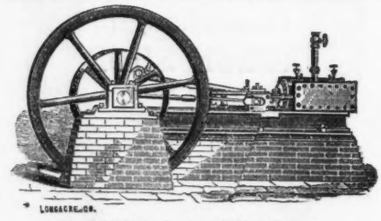

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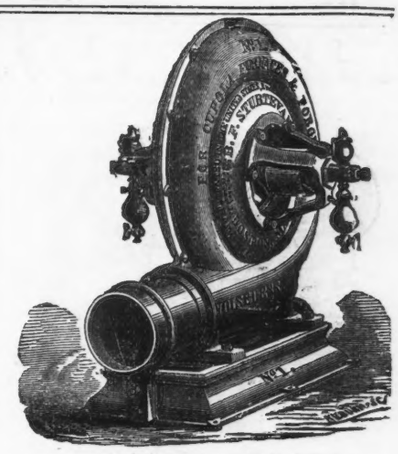

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